CURTIS'S

BOTANICAL MAGAZINE,

COMPRISING THE

Plants of the Royal Gardens of Kew,

AND

OF OTHER BOTANICAL ESTABLISHMENTS IN GREAT BRITAIN;

WITH SUITABLE DESCRIPTIONS;

BY

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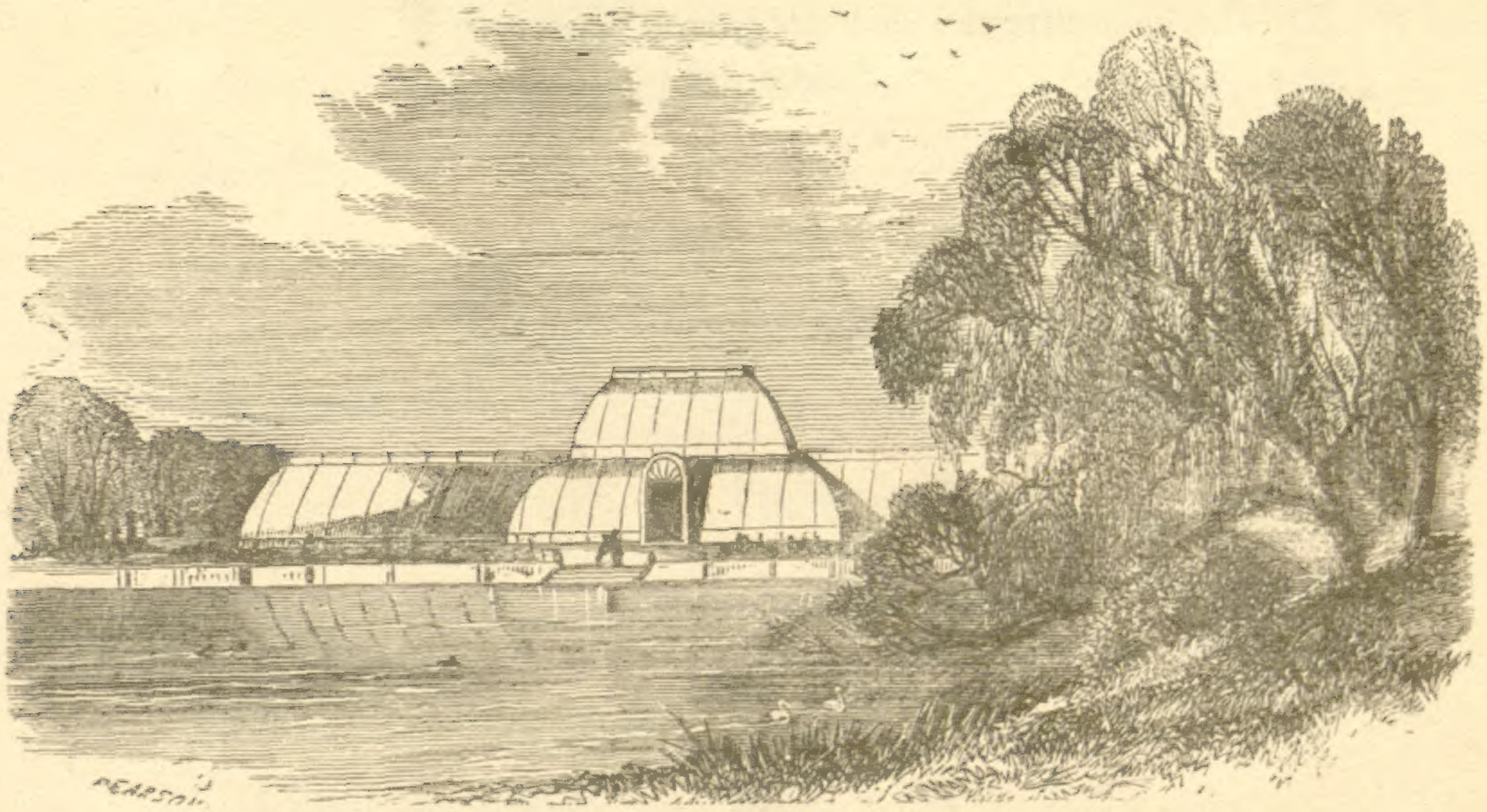
VOL. XXXVII.
OF THE THIRD SERIES.
(Or Vol. CVII. of the Whole Work.)



**"Call the vales and bid them hither cast
Their bells and flowerets of a thousand hues."**

LONDON:
L. REEVE & CO., 5, HENRIETTA STREET, COVENT GARDEN.
1881.

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Mo. Bot. Garden,
1897.

PRINTED BY
GILBERT AND RIVINGTON, LIMITED,
ST. JOHN'S SQUARE.

TO

THE REV. H. N. ELLACOMBE, M.A.,

BITTON VICARAGE.

My dear Mr. Ellacombe,

For upwards of half a century the Editors of the Botanical Magazine have exercised the privilege of dedicating a yearly volume to an individual distinguished for his love of Botany and Horticulture.

Allow me, when adding your name to the list of recipients of this modest tribute, to record my high appreciation of the value of your venerable father's and your own intelligent interest and zeal in the introduction and cultivation of interesting, rare, and beautiful hardy plants, and your disinterested liberality in the distribution of them amongst Horticulturists.

Believe me,

Most faithfully yours,

JOS. D. HOOKER.

Royal Gardens, Kew,

Dec. 1*st*, 1881.

A.B. del. J.N. Fitch, Lith

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TAB. 6534.

SILPHIUM LACINIATUM.

The Compass Plant of the Prairies.

Nat. Ord. COMPOSITÆ.—Tribe HELIANTHOIDEÆ.

Genus SILPHIUM, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 350.)

SILPHIUM *laciniatum*; erectum, 3–8 pedale, ubique hispido-setosum, caule simplici valido folioso, foliis petiolatis pinnatipartitis lobis magnis elongatis subdistantibus linearibus v. lineari-oblongis acutis remote dentatis lobatis pinnatifidisve petiolo amplexicauli, capitulis paucis subterminalibus subracemosis 3–5 poll. diam., involucri bracteis late ovatis apicibus patentibus v. recurvis viridibus herbaceis, ligulis 20–30 horizontalibus anguste lineari-oblongis, 2-nerviis, acheniis late alatis apice profunde emarginatis.

S. laciniatum, *Linn. Sp. Pl.* n. 1301; *DC. Prodr.* vol. vi. p. 512; *Linn. fil. Dec.* p. 5, tab. 3; *Jacq. fil. Eclag.* i. tab. 90; *A. Gray, Bot. N. U. States* (ed. 5), p. 249.

S. spicatum, *Poir. Suppl.* vol. v. p. 157.

This noble plant was introduced into Europe, in 1781, by M. Thouin, and flowered for the first time in the Botanic Garden of Upsala in Sweden. It has been in cultivation in Europe ever since, though its name and fame as the Compass Plant of the Prairies is of comparatively modern date, it having before that borne the popular names of Turpentine Plant and Rosin-weed, except amongst the hunters and settlers in the Western States. With regard to the history of its reputed properties as an indicator of the meridian by the position of its leaves, I am fortunate in having recourse to my friend Professor Asa Gray, now in England, who has most kindly furnished me with the following very interesting account of this matter:—

"The first announcement of the tendency of the leaves of the Compass Plant to direct their edges to the north and south was made by General (then Lieutenant) Alvord, of the U. S. army, in the year 1842, and again in 1844, in communications to the American Association for the

Advancement of Science. But the fact appears to have long been familiar to the hunters who traversed the prairies in which this plant abounds. The account was somewhat discredited at the time, by the observation that the plants cultivated in the Botanic Garden at Cambridge, U.S., did not distinctly exhibit this tendency. But repeated observation upon the prairies, with measurements by the compass of the directions assumed by hundreds of leaves, especially of the radical ones, have shown that, as to prevalent position, the popular belief has a certain foundation in fact. The lines in 'Evangeline'* were inspired by a personal communication made by Gen. Alvord to the poet Longfellow.

"Since the leaves tend to assume a position in which the two faces are about equally illuminated by the sun, it might be suspected that their anatomical structure was conformed to this position. This has been confirmed, first by Mr. Edward Burgess, who, when a pupil of mine, observed that the stomata were about equally abundant on the two faces of the leaf; and next by Mr. Arthur, of Iowa, who has recently published in Prof. Bersey's Introduction to Botany, a figure of a section of a leaf, showing that the arrangement of the 'palisade cells' of the upper and lower strata is nearly the same. The leaves always maintain a vertical position, except when overborne by their weight. As to their orientation, not only is this rather vague in the cultivated plant, but subject to one singular anomaly, which may be commended to Mr. Darwin's attention. I have several times met with a leaf abruptly and permanently twisted to a right angle in the middle; so that, while the lobes of the basal half pointed say east and west, those of the apical half pointed north and south."

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* Though, no doubt, familiar to many of my readers, these lines will well bear repetition here:—

> "Look at this delicate plant that lifts its head from the meadow,
> See how its leaves are turned north, as true as the magnet;
> This is the compass flower, that the finger of God has planted
> Here in the houseless wild, to direct the traveller's journey
> Over the sea-like, pathless, limitless waste of the desert.
> Such in the soul of man is faith."

I cannot congratulate the poet on the fidelity of the description of the plant as a "delicate" one.

To the above I have little to add. I have not been able to detect any orientation of the leaves in the Kew cultivated specimens, but these not being planted in a good exposure all round, are out of court as witnesses. On the other hand, when traversing the prairies with Dr. Gray, in 1877, I watched the position of the leaves of many hundred plants, from the window of the railway car, and, after some time, persuaded myself that the younger more erect leaves, especially, had their faces parallel approximately to the meridian line. I may mention that I, on the same occasion, convinced myself that the flower-heads of various of the great *Helianthoid Compositæ*, that grew in hosts on the prairie, did follow the sun's motion in the heavens to a very appreciable degree,—their morning and evening positions being reversed. This observation did not, however, extend to the Compass Plant, the rigid stout peduncles of whose flower-heads would not be expected to favour such a motion.

Though never before figured in any English work, the Compass Plant has been for many years in cultivation in Kew, where it forms a very striking object, growing eight feet high, and flowering profusely in August and September in the Herbaceous ground. In the United States its range is from Michigan and Wisconsin, westward to the Rocky Mountains, and southward to Texas and Alabama.—*J. D. H.*

Fig. 1, ray-flower; 2, stigmatic arms of ditto; 3, scale of the receptacle; 4, disk-flower; 5, stamen of ditto; 6, stigma of ditto; 7, scale of receptacle from disk; 8, vertical section of receptacle; 9, portion of leaf-margin:—*all, but figs.* 1, 3, 4, 7, and 8, *enlarged.*

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TAB. 6535.

PITCAIRNIA ZEIFOLIA.

Native of Central America.

Nat. Ord. BROMELIACEÆ.—Tribe PITCAIRNIEÆ.

Genus PITCAIRNIA, *L'Herit.*; (*K. Koch in Walp. Ann.* vol. vi. p. 78.)

PITCAIRNIA (Lamproconus) *zeifolia*; foliis basalibus 5–6 rosulatis longe petiolatis inermibus lanceolatis chartaceis 2–3-pedalibus utrinque viridibus e medio ad apicem et basin angustatis, pedunculo elongato foliis pluribus reductis vaginantibus acuminatis prædito, floribus pluribus ascendentibus laxe subspicatis, pedicellis crassis brevissimis, bracteis ovatis rubris calyce subæquilongis, calycis oblongi segmentis oblongis obtusis valde imbricatis viridibus glabris, petalis albidis lingulatis obtusis calyce subtriplo longioribus basi haud appendiculatis, genitalibus petalis subæquilongis, seminibus utrinque conspicue caudatis.

P. zeifolia, *K. Koch in Ind. Sem. Hort. Berol.* 1854, *App.* p. 11; *Walp. Ann.* vol. vi. p. 80.

This is one of the small number of Pitcairnias from Central America, with broad petioled leaves, large subsessile flowers, large clasping bracts, and seeds conspicuously tailed at both ends, which make up the section *Lamproconus*, published as a genus by Lemaire. Its nearest ally is the New Granadan *P. Funkiana* of A. Dietrich, which was figured under the name of *P. macrocalyx*, at tab. 4705 of the BOTANICAL MAGAZINE. The present plant, although it has been known for a quarter of a century, has not been figured previously. It was discovered by Warcewicz in Guatemala, and we have a fine specimen in the Kew Herbarium, gathered by Purdie in the province of Santa Martha in New Granada, about 1845. Our drawing was made from a plant sent by Dr. Regel, which flowered in the Palm House at Kew in December, 1879.

DESCR. *Leaves* five or six to a basal rosette; petiole reaching the length of a foot, channelled, quite unarmed; lamina lanceolate, two or three feet long, two or two and a half inches broad at the middle, papery in texture, green

on both sides, almost entirely destitute of lepidote scales, narrowed gradually to both ends. *Peduncle* one or two feet long, sheathed by numerous reduced lanceolate leaves with long free tips. *Flowers* a dozen or more in a multifarious rather lax subspicate raceme; pedicels very short and stout; bracts bright red, ovate, about as long as the calyx, which they clasp and conceal. *Calyx* oblong, an inch long, green, naked; segments oblong, obtuse, much imbricated. *Petals* greenish-white, lingulate, obtuse, about three times as long as the calyx, not scaled at the base. *Stamens* inserted at the base of the petals; anther linear, yellow. *Ovary* adnate to the calyx only at the very base; style filiform, reaching to the tip of the petals; stigmas spirally twisted. *Capsule* as long as the calyx. *Seeds* very numerous, minute, with a tail an eighth of an inch long at each end.—*J. G. Baker.*

Fig. 1, apex of a stamen, *magnified;* 2, the pistil, complete, *natural size;* 3, horizontal section of the ovary.

Tab. 6536.

NYMPHÆA TUBEROSA.

Native of Eastern North America.

Nat. Ord. Nymphæaceæ.—Suborder Nymphææ.

Genus Nymphæa, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 46.)

Nymphæa *tuberosa*; rhizomate repente tuberifero, tuberibus ovoideis solitariis v. confertis, foliis submersis breviter petiolatis membranaceis lobis divaricatis, natantibus magnis rotundatis, lobis approximatis acutis, subtus pallide viridibus v. flavescentibus v. fusco-purpureis, floribus 4–7 poll. diam. fere inodoris, sepalis 4 viridibus, petalis numerosis oblongo-oblanceolatis obtusis albis, staminibus extimis connectivo producto cuspidato, seminibus sessilibus globoso-ovoideis, arillo obsoleto v. brevi cupulari rarius completo.

N. tuberosa, *A. Paine, Cat. Pl. Oneida, in Report of Regents of University of New York*, 1865, p. 132; *A. Gray, Man. Bot. N. U. States* (ed. 5), p. 56.

It was not till 1865 that two species of White Water Lily were established as indigenous in the United States of America (though the veteran botanist Nuttall evidently believed it), when the subject of the present plate was carefully distinguished from the common American Water Lily, by a young local botanist, Mr. A. Paine. As cultivated in England, the characters are not very obvious whereby it is distinguished from *N. odorata* or *N. alba*, if the creeping rhizome be not examined, and so similar, indeed, are these plants in flower and leaf, that I was obliged to have recourse to raising the pot in which this grew, for the purpose of verifying the drawing by an examination of the root; when this is found to bear tubers along the side of the rootstock, which are wanting in the other American and the Europ an species. Other characters are the faint scent of *N. tuberosa* compared with the delicious odour of *odorata*, the larger leaves, the crescent-shaped stipules, more numerous veins of the leaf, and more globose seeds, with a usually incomplete aril.

Nymphæa tuberosa is a native of lakes and slow-running

waters in the North-Eastern United States, and may be the plant alluded to by Nuttall as the European *N. alba*, with which it agrees in being nearly scentless; it is described as having the leaves green or yellowish beneath, but in our cultivated specimens they were of a pale dirty-purple. The rootstock prolongs indefinitely, but the leaf-bearing tip alone is vigorous, the old part decaying as the new elongates. The tubers, which are one to four inches long, when fully formed break away from the rootstock, and float about till they are stranded and germinate; they resemble those of the Jerusalem Artichoke, and as many as thirty have been counted on six inches of rootstock. In shallow water both leaves and flowers rise high above the surface; in deep water the ripening fruit is drawn to the very bottom by the spiral coiling of the peduncle. Cattle devour the leaves; as do deer, which leave the woods at night to feed on them. The Royal Gardens are indebted to the Botanic Garden of Harvard University, U. S., for tubers, which flowered in July and August.

Descr. *Rootstock* creeping, bearing oblong tubers singly or in clusters along its length. *Leaves* often very large, circular, eight to eighteen inches in diameter, sometimes retuse with contracted sides, margin entire or undulate; nerves twelve to fifteen radiating from the base on each side of the midrib, and five to seven from the latter; lobes approximate or meeting, acute. *Flowers* four to seven inches in diameter, slightly odorous when first opened, smelling of apples or of Vanilla (according to various authors), soon inodorous. *Sepals* and *petals* as in *N. alba* and *odorata*. *Anthers* long, the outer with cuspidate tips. *Seeds* with a usually incomplete aril, rarely with none or a complete one.—*J. D. H.*

Fig. 1, vertical section of ovary, disk, and stamens of *N. tuberosa*; 2, ditto of *N. odorata*, *both of the natural size*; 3 and 4, front and back view of stamen of *N. tuberosa*; 5, petaloid stamen of ditto:—*all enlarged.*

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Tab. 6537.

STATICE tatarica.

Native of S. E. Europe and Siberia.

Nat. Ord. Plumbagineæ.—Tribe Staticeæ.

Genus Statice, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 625.)

Statice (Goniolimon) *tatarica;* glaucescens, foliis obovato- v. oblongo-spathulatis mucronatis in petiolum brevem sensim angustatis, scapo humili paulo supra basin divaricatim dichotomo late et patentim corymboso, ramis 3-quetris patenti-recurvis, spiculis 1–2 floris in spicas terminales laxas v. densiusculas dispositis, bracteis herbaceis coriaceis angustis membranaceis pungentibus acute carinatis, interiore 3-cuspidata cuspidibus rectis subæquilongis, calyce infundibulari plicato, tubo undique breviter puberulo, limbi æquilongi lobis oblongis obtusis, petalis basi connatis unguibus contiguis, stylis elongatis papillosis, stigmatibus capitatis.

S. tatarica, *Linn. Sp. Pl.* vol. i. p. 395; *Willd. Sp. Pl.* vol. i. p. 1527; *Bieb. Fl. Taur. Cauc.* vol. i. p. 251; *Gmel. Fl. Sibir.* vol. ii. p. 223, t. 92; *Ait. Hort. Kew.* vol. ii. p. 182.

S. Besseriana, *Rœm. and Schultes Syst.* vol. vi. p. 789; *Reichb. Ic. Crit.* vol. viii. t. 720.

S. trigona, *Pall. Ind. Pl. Taur.* (*ex Rœm. and Sch.*).

Goniolimon tataricum, *Boiss. in DC. Prodr.* vol. xii. p. 632, *et in Flor. Orient.* vol. iv. p. 854; *Reichb. Ic. Fl. Germ.* vol. xvii. t. 88.

With the exception of the Thrift—which is generally consigned to do duty as "edgings," and a few showy greenhouse species—the genus *Statice* has found little favour of late with cultivators; yet it contains many plants of singular beauty and interest. Of these the palm must be given to the Canary Island species, introduced by the late M. Bourgeau, which were once the ornaments of a house at Kew devoted to plants loving the dry climate of the South of Europe (see Bot. Mag. tab. 3701, 3776, 4125, 5753, 5762), but which have long since "gone out of cultivation," *S. Holfordii*, Hort., remaining as almost the only representative of the group. Amongst the South-Eastern European ones are many hardy kinds of remarkable beauty, such as the subject of the present plate, whose flowering-corymbs (of one plant) form together rounded masses a yard in diameter

of delicate sprays studded with ruby-coloured flowers, each set in a silvery calycine cup; than which a prettier floral object cannot well be conceived. It is a native of saline districts in the South-East of Europe, from Dalmatia and Hungary eastward through Bulgaria and S. Russia to the Crimea and Siberia east of the Ural Mountains. A careful comparison of the specimens cultivated at Kew as *S. tatarica*, and here figured, inclines me to think that this is not the common form of that species, of which the numerous Herbarium specimens which I have examined show denser closer-set flowers, and that, but for the shape of the leaves, it would be referable to the variety *angustifolia* of Boissier, which has a more glabrous calyx and usually one-flowered spikelets, and is the *S. Besseriana*, Rœm. and Schult., of which there is a poor figure in Reichenbach's Iconographia with the slender sprays and distant flowers of our plant.

S. tatarica was introduced into England in 1731 by Philip Miller, and is described in the first edition of his Dictionary as Limonium 5; it is perfectly hardy, flowers in June and July, and remains long in bloom.

Descr. *Root* woody, perennial. *Leaves* tufted, four to six inches long, oblong, spathulate or oblanceolate, acuminate, mucronate, rigid, glabrous, narrowed into the petiole. *Scape* short, stiff, erect, triquetrous, two to three inches long, soon giving off a long broad recurved panicle of distichous recurved slender triquetrous branches, which again bear simple or branched distichous recurved spikes one-half to one and a half inch long. *Spikelets* subunilateral on the branches, distant, one- to three-flowered; outer bracts ovate, keeled, pungent, with broad membranous margins; innermost oblong, with three nearly equal cusps. *Flowers* one-sixth of an inch long. *Calyx* funnel-shaped, plicate; lobes short, oblong, obtuse, erect. *Petals* connate at the base; claws long, contiguous, together forming a tube; limb bright ruby-red, notched. *Styles* filiform; stigmas capitate.—*J. D. H.*

Fig. 1, flower; 2, the same, cut vertically; 3, stamen; 4, pistil; 5, outer, and, 6, inner bract:—*all enlarged.*

2. 1.

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Tab. 6538.

LYSIONOTUS SERRATA.

Native of the Himalaya and Khasia Mountains.

Nat. Ord. Gesneraceæ.—Tribe Cyrtandreæ.

Genus Lysionotus, *Don*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1015.)

Lysionotus *serrata;* 1–2-pedalis, glaberrima, carnosula, caule cylindraceo purpureo-punctulato, foliis oppositis et ternatim verticillatis parum obliquis oblongo-lanceolatis acuminatis serratis basi acutis breviter petiolatis supra nitidis, floribus in corymbos axillares longe pedunculatos di-tri-chotomos dispositis, ramulis basi bracteatis, calyce 5-partito persistente laciniis oblongo-lanceolatis acutis, corolla 1½-pollicari infundibulari puberulo, tubo superne ampliato, limbo patente 2-labiato, labio superiore 2-lobo, inferiore majore 3-lobo, fauce ampla lineis 2 elevatis flavis, staminibus fertilibus 2, anantheris 2 subulatis, ovario cylindraceo, stylo brevi stigmate orbiculato, capsula 2–4 poll. longa, seminibus subulatis utrinque pilo elongato terminatis.

L. serrata, *Don in Ed. Phil. Journ.* 1825, p. 85; *Prodr. Fl. Nep.* p. 124; *Br. in Benn. Pl. Jav. Rar.* p. 117.

L. ternifolia, *Wall. Pl. As. Rar.* vol. ii. p. 20, t. 118; *DC. Prodr.* vol. ix. p. 264; *Miq. Fl. Ind. Bat.* vol. ii. p. 723; *Clarke, Commel. et Cyrtand. Beng.* t. 52.

Calosacme polycarpa, *Wall. Cat.* n. 804.

The temperate and subtropical regions of the Himalaya Mountains, especially in the eastern division of the range, abound in beautiful species of *Gesneraceæ*, of which a considerable number have been cultivated at Kew, and some figured in this work; and it is not a little remarkable that the subject of the present plate, which is the most widely distributed and one of the most beautiful of them all, should have so long been a stranger to our gardens. Unfortunately these *Gesneraceæ* of India are all stove or greenhouse plants, and in the case of the latter, the wintering of them requires great care, as they cannot be exposed to the long cold of the English winter, and if put by in a greenhouse they are apt to start into growth too early; many of them, however, and the present in particular, form fleshy rootstocks which will stand a good deal of drought,

though none possess such tubers as the American Gesnerias, and which render them so easy of culture and of transportation.

Lysionotus serrata is a native of the subtropical and temperate regions of the Himalaya, from Kumaon in the north-west to Bhotan in the east, inhabiting damp forests at elevations of 5000 to 8000 feet in Sikkim, descending to 2500 in Kumaon; it is also abundant at 4000 feet in the Khasia mountains, and is found on the Karen hills in Burma; its favourite sites are mossy rocks, banks, and old tree-trunks. At Kew it fills a square pan with stems a foot high, and seems quite at home in a subtropical heat, flowering in July and August; and in its native mountains the peduncles are often a foot long, and bear clusters of forty to fifty flowers, of which many open at a time. The plant figured was raised from seed sent by our excellent correspondent in Darjeeling, Mr. Gammie, of the Forest Department. The pale whitish stripe along the nerves of the leaf is not common in the wild state of the plant.

Descr. Quite glabrous, except the corolla. *Stem* one to two feet high, stout, cylindric, fleshy, green speckled with purple. *Leaves* four to ten inches long, opposite and whorled, elliptic- or oblong-lanceolate, slightly oblique, acuminate, base acute, serrate, rather fleshy; petiole half to one inch, dark green above, reddish beneath. *Flowers* in drooping long-peduncled axillary corymbs; bracts at the forks opposite, ovate, deciduous. *Calyx* one quarter to half an inch long, five-partite; segments lanceolate, spreading. *Corolla* one and a half inch long, hairy, funnel-shaped, swollen beyond the middle, pale lilac or blue with darker blue veins; mouth very oblique, two-lipped; lips short, upper two-lobed, lower three-lobed, lobes rounded; throat open, with two raised parallel golden ridges. *Capsules* three to four inches long, very slender; valves membranous. —*J. D. H.*

Fig. 1, corolla laid open; 2, stamens; 3, ovary; 4, transverse section of ditto:— *all but fig.* 1 *enlarged.*

A.B del. J.N Fitch. ith.

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Tab. 6539.

CRAWFURDIA LUTEO-VIRIDIS.

Native of the Sikkim Himalaya.

Nat. Ord. Gentianeæ.—Tribe Swertieæ.

Genus Crawfurdia, *Wall.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 815.)

Crawfurdia (Tripterospermum) *luteo-viridis;* foliis petiolatis ovatis ovato-cordatis v. ovato-lanceolatis 3–5-nerviis acuminatis marginibus undulato-subcrenatis v. integerrimis, calycis tubo 5-gono angulis costatis costis in lobos subulato-lanceolatos erectos tubo æquilongos excurrentibus, corollæ albo- v. luteo-virescentis tubo infundibulari-campanulato calyce duplo longiore limbi parvi lobis acutis, bacca ellipsoideo-cylindracea coccinea nitida stipitata, stipite corolla longiore.

C. luteo-viridis, *Clarke in Journ. Linn. Soc.* vol. xiv. p. 443.

One species of this remarkable genus of climbing Gentians had been cultivated in England previously to the introduction of the present, for which we are indebted to Dr. King, of the Royal Botanic Gardens, Calcutta, who sent seeds from Darjeeling to Kew in 1879, which flowered in 1881 in a cool pit. Though not equalling the *C. fasciculata* (Tab. 4838) in the colour of the flowers, which in that plant areof a beautiful blue-purple hue, the brilliancy of the polished berries of this, which are abundantly produced, and the vinous autumnal colouring of its leaves and stems, render it a very desirable greenhouse plant. Different, however, as these species appear when seen in a living state, it is very difficult to discriminate them when dried, and I am doubtful as to their geographical limits. Wallich, indeed, seems to have confounded the two species in his Herbarium, and Mr. Clarke, who has worked up the Gentianeæ for the "Flora of British India," informs me that he is uncertain as to their geographical limits. Not only are the characters of the flower difficult to ascertain in a dried state, but the fruit seems to vary in shape, in the length of the stipes, and in being a thick walled or fleshy berry, or a subdehiscent

hardly fleshy capsule. There is little doubt, I think, that *C. lutea-alba* inhabits the whole Himalaya from Kumaon to Sikkim, at elevations of 8000 to 10,000 feet, and it may prove to be identical with *C. Japonica*, Sieb. and Zucc., of Japan.

Descr. *Stem* very slender, twining, red in age. *Leaves* petioled, one and a half to three and a half inches long, ovate, ovate-cordate or ovate-lanceolate, acuminate, margin entire or waved and obscurely crenate, bright green above, pale beneath, rather leathery, mottled with a pale purplish-red in age; nerves three to five from the top of the petiole; petiole a quarter to one inch long. *Flowers* clustered in the leaf-axils and terminal, sessile, pendulous, one and a half inch long. *Calyx* with a five-angled oblong tube, rounded at the base, green, angles thickly ribbed, the ribs prolonged into subulate-lanceolate erect lobes as long as the tube. *Corolla* between funnel- and bell-shaped, twice as long as the calyx-lobes, tube green, limb white (yellowish, *Clarke*) with green folds, lobes broad acute. *Stamens* inserted halfway down the tube, anthers very small, didymous. *Ovary* stipitate, slender; style short; ovules numerous. *Fruit* one inch long, exclusive of the stalk, which is as long as the corolla, ellipsoid-cylindric, brilliant red, shining, fleshy, indehiscent, many-seeded; stalk enclosed in the withered persistent corolla. *Seeds* very numerous, orbicular, vertically flattened with a double crest or wing on one side.—*J. D. H.*

Fig. 1, longitudinal section of flower; 2, stamens, back and front view; 3, base of stalk of ovary; 4, stigmas; 5, transverse section of berry; 6, seeds:—*all enlarged*

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Tab. 6540.

POLYGONUM SACHALINENSE.

Native of Japan and the Island of Sachalin.

Nat. Ord. Polygonaceæ.—Tribe Polygoneæ.

Genus Polygonum, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 99.)

Polygonum (Pleuropterus) *sachalinense*; caulibus dense fasciculatis erectis elongatis fistulosis sulcatis foliosis, foliis magnis glabris breviter petiolatis ovatis v. oblongo-ovatis acutis v. acuminatis basi truncatis v. cordatis subtu glaucescentibus, ochreis fissis deciduis, racemis axillaribus et terminalibus compositis confertifloris foliis multoties brevioribus rachibus tomentosis, floribus parvis glaberrimis, bracteis ovatis longe acuminatis, pedicellis capillaribus infra medium articulatis, perianthio fructifero elongato-obcordato 3-alato alis acutis, stigmatibus 3 subsessilibus.

P. sachalinense, *F. Schmidt in Primit. Fl. Amur.* p. 233; *Regel Gartenfl.* 1864, p. 68, t. 429; *Carrière in Rev. Hortic.* 1876, p. 36, *cum Ic. Xylog.*; *Masters in Gard. Chron.* 1870, p. 1599.

This is by far the noblest species of *Polygonum* known in cultivation, if not the noblest of the genus, forming, as it does, clumps six to eight feet high and broad, of innumerable rich red-brown wand-like stems that spread and droop gracefully all round, loaded with magnificent leaves, which attain a length of eighteen inches and breadth of ten. It belongs to a set of N. E. Asiatic and Japanese species, of which two have been lately figured in this work, namely, *P. compactum*, Tab. 6476, and *P. cuspidatum*, Tab. 6503, both of which it surpasses in size and beauty of foliage, but not in inflorescence, which is very poor in comparison, of an inconspicuous greenish-yellow hue.

Polygonum sachalinense was discovered in Amur-land by the celebrated Russian botanist and traveller Maximovicz, and the first notice I find of its being cultivated is in the Moscow Zoological Gardens, where it was seen by M. André in 1869. It was, however, known in England before that date, and, if I mistake not, was in cultivation at Kew at least twenty years ago, having been probably introduced

by one of the Kew collectors in Japan, Mr. Oldham or Wilford. As an ornamental plant it has perhaps no rival for vigour of growth and rapid multiplication by the root, which last quality has its drawbacks, for it spreads widely, and obtrudes itself where not wanted, to the destruction of its neighbours. Like its allies already alluded to, it flowers late in September and October.

DESCR. *Roots* with numerous strong underground suckers. *Stems* six to eight feet high, very numerous from the roots, erect and drooping above, leafy, hollow, as thick as the thumb at the base, red-brown, angular, grooved. *Leaves* six to eighteen inches long by three to ten broad, oblong or ovate with a truncate or cordate base, acute or acuminate, sometimes undulate at the margins, bright green above, glaucous beneath with a white sparsely hairy midrib and reticulated veins; sheathing stipules elongate, glabrous, membranous, deciduous; petiole one to three inches long. *Inflorescences* of short racemes in a crowded sessile panicle in the axils of the leaves and terminal, equalling or twice the length of the petiole, branches and rachis of the panicle tomentose. *Flowers* densely crowded, pale yellow-green, about one-tenth of an inch in diameter (polygamous?); pedicels short, capillary, jointed below the middle; bracts ovate, acuminate. *Fruiting perianth* one-third of an inch long, obcordate, three-winged, narrowed into the pedicel, wings not veined. *Stigmas* short, sessile, recurved.—*J. D. H.*

Fig. 1, section of female flower; 2, ovary; 3, ovule:—*all enlarged.*

A.B. del. J.N.Fitch

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TAB. 6541.

MILLETTIA MEGASPERMA.

Native of Queensland.

Nat. Ord. LEGUMINOSÆ.—Tribe GALEGEÆ.

Genus MILLETTIA, *Wight et Arnott;* (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 498.)

MILLETTIA *megasperma;* caule lignoso alte scandente, partibus novellis racemis petiolisque exceptis glaberrima, foliis sempervirentibus alternis pinnatis, pinnis 3–7-jugis cum impari obovatis oblongisve breviter petiolulatis obtusis v. breviter acuminatis coriaceis utrinque saturate viridibus nitidis, racemis 4–8-pollicaribus subpaniculatis, floribus sparsis purpureis, calycis labiis tubo brevioribus superiore truncato, inferiore obtuse 3-fido vexillo orbiculari sericeo intus supra basin transverse calloso, filamento superiore libero, ovario stipitato, legumine 6-pollicari crasso sublignoso dense velutino, seminibus magnis crassis.

M. megasperma, ***Benth. Fl. Austral.*** **vol. ii. p. 211.**

WISTARIA megasperma, ***F. Muell. Fragm.*** **vol. i. p. 10.**

The genus *Millettia* consists of upwards of forty species of tropical Asiatic and African Leguminous climbers, with one Australian. It is closely allied to *Wistaria*, differing only in the thick-valved tardily dehiscent pod. Indeed these genera are so closely allied, that one plant, the *W. Japonica*, Sieb. and Zucc., has been pronounced by Bentham to be intermediate in point of structure between them.

Like its near ally, *Wistaria sinensis*, the *Millettia megasperma* is a tall woody climber, festooning lofty forest trees in its native country, namely, river banks in tropical and subtropical Australia, where its pendulous panicled racemes of bright purple flowers and glossy evergreen leaves must have a very beautiful effect. It has been collected at various places in Queensland, and in the northern parts of New South Wales, and was first described by Baron von Mueller, to whom the Royal Gardens are indebted for its introduction. The figure is from a plant growing up the south-east angle of the main body of the Temperate House at Kew, where it flowered in August of last year.

FEBRUARY 1ST, 1881.

DESCR. A tall evergreen woody climber, with dark green glossy foliage and copious panicled racemes of purple flowers, glabrous except the puberulous young shoots and panicles and petioles. *Leaves* eight to twelve inches long, with three to seven pairs of leaflets and an odd one; petiole and rachis slender; leaflets very shortly petiolulate, about two inches long, oblong or elliptic, subacute or shortly acuminate, dark green on both surfaces, glossy above, nerves delicate; stipules caducous. *Racemes* pendulous, slender, panicled, four to eight inches long, rachis pubescent; flowers numerous, about two-thirds of an inch in diameter, purple, except the back of the standard, which is nearly white; pedicels short, slender. *Calyx* short, base hemispheric; lips subequal, upper truncate, lower trifid. *Standard* orbicular, limb emarginate at the much thickened base just above the claw. *Wings* boat-shaped, subacute, bases auricled. *Keel* obtuse. *Upper stamen* free. *Ovary* many-ovuled. *Pod* four inches long, very thick, falcate and flattened, densely velvety, few-seeded, tardily dehiscent; valves woody. *Seeds* broad, thick, two-thirds of an inch in diameter; testa brown, hilum elongate.—*J. D. H.*

Fig. 1, section of calyx, staminal tube, and ovary; 2, calyx; 3, standard; 4, wings; 5, tips of ditto, showing their cohesion; 6, ovary; 7, staminal tube:—*all a little enlarged.*

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Tab. 6542.

CLEMATIS æthusæfolia, *var.* latisecta.

Native of Amur-land and N. China.

Nat. Ord. Ranunculaceæ.—Tribe Clematideæ.

Genus Clematis, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 3.)

Clematis (Flammula) *æthusæfolia*; scandens, glaberrima v. puberula, caulibus gracilibus angulatis sulcatisque, foliis parvis 2–3-pinnatisectis, segmentis cuneatis incisis v. pinnatilobatis obtusis angusto linearibus v. oblongis v. obovatis, pedunculis solitariis binis ternisve elongatis gracilibus erectis apice decurvis, floribus inter minoribus $\frac{1}{2}$–$\frac{3}{4}$ poll. longis cylindraceo-campanulatis, sepalis 4 oblongis cohærentibus albis dorso pubescentibus apicibus latis liberis, paullo recurvis obtusis v. subacutis, filamentis dilatatis.

C. æthusæfolia, *Turcz. Decad. Pl. Chin.* p. 2; *Walp. Rep.* vol. i. p. 5.

Var. *latisecta*, foliorum segmentis latis.

Maxim. Prim. Fl. Amur. p. 12; *Regel Flor. Ussur.* n. 4; *Gartenfl.* 1861, p. 342, t. 342. C. æthusæfolia, *Carrière in Rev. Hortic.* 1869, p. 10, *cum Ic. Xylog.*

A very graceful climber, perfectly hardy, as might be anticipated from its native country, which extends from the neighbourhood of Pekin—whence we have examined dried specimens collected by Dr. Bushell, late of the Chinese Embassy, and others—to the Amur river. It varies greatly in the breadth of the leaf-segments; those of the originally-described form being divided into very narrow linear lobes, whilst in that figured here they are as broad as long, and in Maximovicz's specimen of this same variety (*latisecta*) they are an inch long and cuneiform. The flowers are, though not conspicuous, exceedingly graceful, very abundantly produced, and pendulous from stiff erect peduncles.

The specimen here figured is from a plant that has long been in the Kew collection, and was, no doubt, received from the St. Petersburg Botanic Gardens; it flowers as late as September and October.

Descr. A slender glabrous or puberulous climber. *Stems* and branches angled and grooved. *Leaves* one to two

inches long, very numerous, twice or thrice pinnately divided; segments narrow or broad, more or less deeply cut into linear obtuse or cuneate or irregularly rounded cut and toothed segments; petiole stiff. *Peduncles* one to three from the nodes of the stem, one to two inches long, stiff, erect, curved at the top. *Flowers* one-half to three-fourths of an inch long, between cylindric and campanulate, white, base rounded. *Sepals* linear-oblong, coherent by their slightly overlapping margins, tips shortly recurved, rounded or subacute. *Filaments* dilated below, hairy.—*J. D. H.*

Fig. 1, longitudinal section of the flower; 2 and 3, stamens; 4, carpel; 5, stigma: —*all enlarged.*

M.S. del. J.N. Fitch, lith

Vincent Brooks Day & Son, lith.

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Tab. 6543.

FOURCROYA CUBENSIS *var.* inermis.

Native of Tropical America.

Nat. Ord. AMARYLLIDACEÆ.—Tribe AGAREÆ.

Genus FOURCROYA (*Vent.*), *Schultes*; (*Kunth Enum.* vol. v. p. 839.)

FOURCROYA *cubensis* var. *inermis*; caudice brevi, foliis 20–30 dense rosulatis lanceolatis viridibus 2–3-pedalibus subintegris exterioribus recurvatis, pedunculo foliis duplo longiori, floribus in paniculam laxam rhomboideam ramis erecto-patentibus dispositis, pedicellis brevissimis cernuis apice articulatis, bracteis minutis deltoideis, ovario cylindrico-trigono 8–9 lin. longo, limbi segmentis oblongo-lanceolatis ovario longioribus, staminibus limbo duplo brevioribus, stylo antheras superante stigmate parvo.

This fine *Fourcroya* came from the collection of Mr. Wilson Saunders, and flowered in the Cactus House at Kew in the winter of 1879-1880. Though at first sight it looks very different, I do not think that it can safely be regarded as more than a variety of the widely-spread tropical American *Fourcroya cubensis* of Haworth, of which, although it is frequently seen in gardens and has been fully known by botanists for the last one hundred and twenty years, no good figure has yet been given. From the ordinary *F. cubensis*, of which a description and the full synonymy will be found in my monograph of the genus in the *Gardeners' Chronicle*, 1879, page 623, our present plant differs by its less rigid leaves and by the total or almost entire suppression of their marginal teeth, which in the type are very large and close, and armed with pungent horny brown spines. The original spelling of the name of the genus is *Furcræa*, but as it was named in honour of the chemist Fourcroy, we have followed the emendation of Schultes, which is now almost universally adopted.

DESCR. *Caudex* very short, about three inches in diameter. *Leaves* twenty or thirty in a dense rosette, lanceolate, bright green and smooth both on back and face, almost or quite

destitute of teeth down the edges, moderately firm in texture, not pungent at the tip, the outer ones recurving, two and a half or three feet long, three inches broad at the middle, narrowed gradually to an inch and a half above the dilated base. *Peduncle* about five feet long, sheathed by several much-reduced ascending leaves. *Panicle* lax, rhomboid, about five feet long by one and a half or two feet broad, its erecto-patent branches a foot or a foot and a half long, with only very small bracts at the base; pedicels very short, drooping, the upper ones of the branch solitary, the lower clustered; bracts minute, deltoid, membranous. *Ovary* green, cylindrical-trigonous, about three-quarters of an inch long; segments oblong-lanceolate, spreading, milk-white, an inch long, a third of an inch broad. *Stamens* half as long as the perianth-segments; filament with a struma an eighth of an inch thick, narrowed into a subulate tip below the small oblong anther. *Style* finally twice as long as the stamens; stigma minute, capitate.—*J. G. Baker.*

Fig. 1, the whole plant, *much reduced;* 2, a flower, with the segments of the limb taken away; 3, two stamens; 4, horizontal section of the ovary; 5, tip of style and stigma:—*all more or less enlarged.*

A.B del. J.N.Fitch lith

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Tab. 6544.

TRICYRTIS MACROPODA.

Native of Japan and China.

Nat. Ord. Liliaceæ.—Tribe Uvularieæ.

Genus Tricyrtis, *Wallich*; (*Baker in Journ. Linn. Soc.* vol. xvii. p. 463.)

Tricyrtis *macropoda*; caule flexuoso 2–3-pedali inferne glabro superne subtiliter glanduloso-puberulo, foliis alternis oblongis amplexicaulibus acutis facie calvatis dorso pubescentibus margine scabris, floribus pluribus laxe corymbosis, perianthii infundibularis segmentis oblongo-spathulatis extus viridibus intus albidis crebre purpureo-punctatis flore expanso late falcatis exterioribus basi foveolatis profunde saccatis interioribus haud foveolatis marginibus inflexis, genitalibus perianthio paulo brevioribus, capsulis linearibus acute angulatis.

T. macropoda, *Miquel in Ann. Mus. Lug. Bat.* vol. iii. p. 155; *Maxim. in Bull. Acad. Petrop.* vol. vi. p. 208; *Regel in Gartenflora*, vol. xviii. p. 129. t. 613; *Franchet et Savat. Enum. Jap.* vol. ii. p. 74; *Baker in Journ. Linn. Soc.* vol. xvii. p. 464.

The genus *Tricyrtis* has so far been very little cultivated in our English gardens. As the plate shows, it is a very distinct and very remarkable Liliaceous type. It is restricted to Japan, China, and the Eastern Himalayas. Six species are now known, all of them closely resembling one another in habit and structure. Three of them have been introduced into cultivation, and the other two, *T. hirta*, Tab. 5355, and *T. pilosa*, Tab. 4955, have already been figured in the Botanical Magazine. The present species flowers in the middle of summer, produces its seeds in autumn, and dies down to the ground in winter. Our drawing was made from a plant that flowered in the herbaceous ground at Kew, in July, 1880.

Descr. *Stem* erect, flexuose, terete, two or three feet long, glabrous in the lower part, finely glandular-pubescent upwards. *Leaves* alternate, oblong, acute, amplexicaul, three or four inches long, moderately firm in texture, with about seven clearly-marked main veins running from the base nearly to the apex, at first slightly pilose, but when

mature glabrous on the upper surface, finely pubescent beneath, denticulate and scabrous on the edges. *Flowers* several, arranged in a lax deltoid corymb, on long erect or ascending glandular-pubescent peduncles. *Perianth* about an inch long, greenish on the outside, whitish within with copious minute purplish-brown spots; segments oblong-spathulate, spreading from halfway down when the flower is fully expanded; the three outer ones deeply saccate and conspicuously foveolate at the base; the three inner ones neither saccate nor foveolate. *Stamens* nearly as long as the perianth; filaments arching away from the centre of the flower at the top; anthers small, oblong, extrorse. *Ovary* linear, acutely angular, narrowed gradually into a short style; stigmas linear-subulate, papillose down to the base, spreading, half an inch long, deeply bifid. *Capsule* firm in texture, linear, acutely triangular, an inch or more long, dehiscing septicidally.—*J. G. Baker.*

Fig. 1, a flower cut down the centre; 2, base of an outer segment of the perianth; 3, base of an inner segment of the perianth; 4, a stamen complete; 5, apex of filament, with anther; 6, stigmas; 7, section of ovary :—*all more or less magnified.*

M.S. del. J.N. Fitch Lith.

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Tab. 6545.

CRINUM Forbesianum.

Native of Delagoa Bay.

Nat. Ord. Amaryllidaceæ.—Sub-order Amaryllideæ.

Genus Crinum, *Linn.*; (*Kunth Enum.* vol. v. p. 547.)

Crinum *Forbesianum;* bulbo maximo brevicollo tunicis membranaceis brunneis, foliis post scapum productis lorato-lanceolatis tripedalibus glaucis humifusis distincte ciliatis, scapo crassissimo ancipiti brevi, umbellis 30–40-floris, spathæ valvis magnis lanceolato-deltoideis rubellis, pedicellis brevibus erectis, floribus cernuis 7–8-uncialibus suaveolentibus, tubo cylindrico, limbi segmentis oblanceolato-oblongis acutis tubo longioribus dorso rubro suffusis dimidio inferiori conniventibus, dimidio superiori flore expanso reflexis, genitalibus declinatis perianthio æquilongis.

C. Forbesianum, *Herbert Amaryllid.* p. 267; *Kunth Enum.* vol. v. p. 577.

C. Forbesii, ***Schultes fil. Syst. Veg.*** vol. vii. p. 864.

Amaryllis Forbesii, *Lindl. in Trans. Hort. Soc.* vol. vi. p. 87.

This is a most curious and interesting species of *Crinum*, remarkable for its very large bulbs, short stout scapes, and very large decumbent leaves, not developed fully till after the flowers have faded. The individual flowers are not very unlike those of the well-known *Crinum ornatum*, and have the same tint of bright red down the outside of the perianth-segments. Its nearest ally is the plant we figured lately from Zanzibar, *Crinum Kirkii*, Tab. 6512. The present species was originally sent to England about the year 1824 by Mr. John Forbes, and was briefly described at the time by Dr. Lindley, from the Chiswick Garden, in the Journal of the Horticultural Society. It appears to have soon been quite lost out of cultivation, and as no figure nor specimen was preserved, it passed into the rank of doubtful species, till it was sent to Kew in 1877 by the late Mr. J. J. Monteiro, one of the last of many valuable contributions to the garden, museum, and herbarium, which we received from him. Mr. Monteiro's bulbs were procured

from the Lebombo Mountains. Our drawing was made from a specimen that flowered at Kew in October, 1878.

Descr. *Bulb* as large as a man's head, with a short neck and copious brown membranous tunics. *Leaves* lanceolate-lorate, not fully developed till after the flowers, decumbent, three feet long, four inches broad, acute, glaucous, distinctly ciliated. *Scape* ancipitous, above an inch in thickness, pale green, at most a foot long. *Flowers* thirty or forty in a dense umbel; spathe-valves lanceolate-deltoid, three inches long, tinted red; pedicels erect, half or three-quarters of an inch long. *Perianth* funnel-shaped, seven or eight inches long, cernuous; ovary oblong, green; tube cylindrical, about three inches long; limb four or four and a half inches long, its segments oblanceolate-oblong, acute, suffused with bright red down the back, permanently connivent in the lower half, reflexing in the upper. *Filaments* declinate, about as long as the perianth-segments; anthers linear-oblong, versatile, under half an inch long. *Style* very slender, declinate, bright red towards the tip, as long as the perianth; stigma capitate.—*J. G. Baker.*

Fig. 1, the whole plant, *reduced;* 2 and 3, portions of the edge of the leaf; 4, stamens and perianth-segments; 5, two anthers; 6, horizontal section of the ovary:—*all more or less enlarged.*

A.B. del. J.N. Fitch Lith

Vincent Brooks Day & Son Imp

Tab. 6546.

ABRONIA latifolia.

Native of Western North America.

Nat. Ord. Nyctagineæ.—Tribe Mirabilieæ.

Genus Abronia, *Juss.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 7.)

Abronia *latifolia*; perennis, viscoso-pubescens, caulibus prostratis crassis succulentis, foliis carnosis late ovatis obovatis subrhombeis v. rotundatis rarius cordatis obtusis integerrimis, petiolo elongato crasso, pedunculis axillaribus folia æquantibus v. superantibus, bracteis involucrantibus 5 oblongis ovatis v. rotundatis floribus brevioribus, umbellis pollicem diametro densifloris, floribus aureis, perianthii tubo elongato superne sensim dilatato, lobis brevibus emarginatis, fructibus subrhombeis utrinque acutis coriaceis, alis lateralibus angustis latisve reticulatim venosis.

A. latifolia, *Eschscholtz in Mem. Acad. Petersb.* vol. x. p. 281; *Watson Bot. of California*, vol. ii. p. 4; *DC. Prodr.* vol. xiii. pars 2, p. 436.

A. arenaria, *Menz. in Hook. Exot. Fl.* t. 193; *Hook. Fl. Bor. Am.* vol. ii. p. 125; *Benth. Bot. Sulph. Voy.* p. 43; *DC. Prodr.* vol. xiii. pars 2, p. 435.

A very common plant on the sandy shores of Western North America, from Magdalena Bay in California, extending thence northward to Vancouver's Island, forming large patches on the beach, enlivened with heads of golden fragrant flowers. It was discovered by Mr. Archibald Menzies, the surgeon and naturalist of Captain Vancouver's expedition to the coast of North-Western America; who also first brought from Chili the seeds of *Araucaria imbricata* (in 1798), from which the two old trees now at Kew and Dropmore, were raised.

The specimen here figured is from a plant that flowers annually in the Herbaceous Ground at Kew in the months of August and September.

Descr. Whole plant glandular-pubescent and viscid, usually coated more or less with sand. *Root* stout, perennial, fusiform, fleshy. *Stems* many from the root, one to two feet long, quite prostrate, succulent, cylindrical, often as thick as a goose's quill. *Leaves* one to one and a half

inches long, very variable in shape, ovate obovate orbicular reniform or obtusely rhomboid, sometimes cordate at the base, obtuse, succulent, dark green; petiole usually longer than the blade, often twice as long, very stout, gradually expanding into the blade. *Peduncle* axillary, as long as or longer than the petiole, equally thick. *Involucral bracts* oblong or ovate, concealed under the flowers. *Umbels* about an inch across, many- and dense-flowered. *Flowers* one-half to two-thirds of an inch long, golden-yellow with a green eye, fragrant. *Perianth-tube* slender, gradually dilated upwards; limb one-quarter of an inch in diameter, lobes obcordate. *Ovary* obovoid. *Fruit* about one-third of an inch long, rhomboid, coriaceous, wings three, broad or narrow, veined, hollow.—*J. D. H.*

Fig. 1, flower; 2, the same laid open longitudinally; 3, stamens; 4, base of filaments and of ovary; 5, stigma; 6, section of ovary :—*all enlarged.*

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Tab. 6547.

NERINE FILIFOLIA.

Native of the Orange Free State.

Nat. Ord. Amaryllidaceæ.—Sub-order Amaryllideæ.

Genus Nerine, *Herbert*; (*Kunth Enum.* vol. v. p. 615.)

Nerine *filifolia*; bulbo parvo ovoideo, foliis 6–10 synanthiis subulatis flaccidis glabris scapo brevioribus facie canaliculatis, scapo gracili tereti subpedali glanduloso-puberulo, umbellis centripetalibus 8–10-floris, spathæ valvis parvis lanceolatis, pedicellis glandulosis flore sæpe longioribus, ovario globoso profunde lobato, perianthii limbi uncialis rosei segmentis anguste oblanceolatis crispatis, genitalibus perianthio subæquilongis, capsulis orbicularibus profunde lobatis, seminibus in loculo 2–3.

This pretty little new *Nerine* belongs to the group called *Distortæ* by Herbert, and in its centripetal inflorescence agrees with *N. flexuosa* and *pulchella*. A narrow-leaved form of the latter, with the same glandular pedicels, discovered by Mr. Thos. Cooper in the Orange Free State, will be found figured in Saunders's Refugium Botanicum, Tab. 329. The present plant, which is also from the Orange Free State, is much less robust in habit than Mr. Cooper's, and differs essentially from all the species already known by its numerous weak slender filiform leaves. We received it at Kew from Mr. Chas. Ayres, Seedsman and Florist, of Cape Town. Our drawing was made from specimens that flowered at Kew in October, 1880. I do not think that *Nerine* can be well separated as a genus from *Ammocharis* and *Lycoris*.

Descr. *Bulbs* ovoid, densely cæspitose, under an inch in diameter; outer tunics brown, very thin. *Leaves* six to ten from a bulb, contemporary with the flowers, slender, subulate, grass-green, glabrous, six or eight inches long at the flowering time, weak in texture, rounded on the back, channelled down the face. *Scape* about a foot long, slender,

terete, densely glandular-pubescent. *Umbel* centripetal, eight- or ten-flowered; spathe-valves greenish, lanceolate, under an inch long; pedicels erecto-patent, densely glandular-pubescent, usually longer than the flowers. *Perianth-limb* horizontal, rose-red, an inch long; segments oblanceolate, crisped, not more than a twelfth of an inch broad, reflexed towards the tip, five of them usually more or less distinctly ascending and the sixth deflexed. *Stamens* declinate, about as long as the perianth; filaments bright red; anthers minute, oblong, reddish; pollen white. *Style* finally exceeding the stamens; stigma capitate. *Capsule* orbicular, deeply lobed, with two or three seeds in each cell.—*J. G. Baker.*

Fig. 1, section of leaf; 2, segment of perianth-limb, with stamen; 3, anthers; 4, pistil, complete; 5, horizontal section of ovary:—*all enlarged.*

M.S. del. J.N. Fitch. Lith.

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Tab. 6548.

ROSA microphylla.

Native of China and Japan.

Nat. Ord. Rosaceæ.—Tribe Roseæ.

Genus Rosa, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 425.)

Rosa *microphylla*; frutex erectus, dense ramosus, glaberrimus v. puberulus, eglandulosus, ramis gracilibus, aculeis ad basin foliorum 2-nis rectis basi dilatatis rameis 0, foliis 3–4-pollicaribus, foliolis 3–7-jugis ellipticis subacutis v. acuminatis serrulatis, petiolo nudo v. sparse aculeolato, stipulis parvis v. 0, floribus solitariis ebracteatis breviter pedunculatis, calycis tubo pedunculoque densissime aculeolatis, aculeolis flavidis rectis a latere compressis, sepalis late ovatis v. ovato-rotundatis fimbriato-laceris persistentibus, petalis roseis 2-lobis, disco incrassato faucem claudente, fructu magno depresso globoso crasse carnoso basi intruso, achæniis paucis basilaribus late ovoideis obtuse angulatis apice obtusis setosis.

R. microphylla, *Roxb. in Lindl. Monog. Ros.* pp. 9, 146; *Bot. Reg.* t. 919; *Roxb. Fl. Ind.* vol. ii. p. 515; *DC. Prodr.* vol. ii. p. 602; *Bot. Mag.* t. 3490; *Wall. Cat.* n. 692; *Brandis For. Fl. of N. W. India*, p. 200; *Hook. f. Fl. Brit. Ind.* vol. ii. p. 364; *Crépin Prim. Monog. Ros.* 330.

The old plate of the double variety of this plant, published nearly half a century ago in this work (Tab. 3490), gives no idea at all either of its habit or botanical characters. That of Lindley in the Botanical Register, though better as regards foliage, also illustrates only the double-flowering state; whilst neither represents the fruit, which is quite unlike that of any of its congeners, and is now for the first time figured. Like many other Roses, the present was known in its cultivated state for long before its native country was discovered, though that this was China was suspected from its having been early recognized by Dr. Lindley as identical with a plant figured in a collection of Chinese drawings of plants in the possession of Mr. after Sir Henry T. Colebrooke. All we know of its early history is, that it was introduced from Canton into the Calcutta Botanic Gardens by Dr. D. Roxburgh, from whence it has been diffused into Indian gardens generally. M.

Crépin, whose is the only good description of the wild plant that has hitherto been published, gives Lake Hakone in central Japan as the sole native locality known to him, it having been collected there by M. Maximovicz in 1862, and Dr. Savatier in 1871; to this can now be added New-Kiang in North China, from whence there is in the Kew Herbarium a very indifferent specimen (apparently of the single form) collected by Dr. Shearer in 1873. In its double form *Rosa microphylla* is commonly cultivated throughout China and Japan, and even in Upper Burma, Dr. Anderson having found it at Momyen.

The fruit, which is as large as a crab-apple, is eaten by the Japanese. The leaflets of the wild form are described by M. Crépin as being medium-sized with long points.

Descr. A ramous eglandular nearly glabrous erect bush, attaining eight feet in height. *Branches* slender, flexuous, glabrous, unarmed except at the bases of the petioles, where there are two nearly straight flattened prickles with dilated bases. *Leaves* two to four inches long, seven- to nine-foliolate; leaflets rarely more than one-half to two-thirds of an inch long, elliptic-ovate, acute, rarely acuminate, finely serrate, firm, smooth above, glabrous or puberulous beneath; rachis smooth or with a few small prickles. *Flowers* solitary, shortly peduncled. *Calyx-tube* hemispheric, densely clothed with stiff spreading straight yellowish laterally flattened prickles; sepals broad, thick, rather fleshy, irregularly deeply lacerate on the margins, persistent. *Disk* very broad, closing the calyx-tube. *Fruit* one and a half to two inches in diameter, depressed-globose, considerably broader than long, intruded at the base; flesh very thick, leaving a small cavity much broader than long. *Achenes* basal, few, about one-third of an inch long, broadly ovoid, obtusely angled, straw-coloured, glabrate with a terminal tuft of bristles.—*J. D. H.*

Fig. 1, vertical section of calyx-tube and disk; 2, ovary; 3, ripe fruit; 4, vertical section of the same; 5, achene:—*all but figs.* 2, 3, *and* 4, *enlarged.*

M.S del.J.N.Fitch.Lith

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Tab. 6549.

ASTER GYMNOCEPHALUS.

Native of Mexico.

Nat. Ord. Compositæ.—Tribe Asteroideæ.

Genus Aster, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 271.)

Aster (Machæranthera) *gymnocephalus*; erecta e radice bienni vel annua, parce ramosa, pube hispidula et per caulem hirsuta, sursum glandulosa, foliis parvulis oblongo-lanceolatis vel radicalibus spathulatis serratis, dentibus setiferis, venis obsoletis, capitulis ramos apice nudiusculos terminantibus mediocribus, involucro hæmispherico e bracteis pluriserialibus lineari-subulatis maxima parte herbaceis hirtello-glandulosis squarroso-recurvis, ligulis perplurimis semipollicaribus lato-linearibus late roseo-purpureis, acheniis brevibus turbinatis villosissimis, pappo e setis rigidulis valde inæqualibus, radii sat breviori parciori, receptaculo insigniter fimbrillato.

A. gymnocephalus, *A. Gray, Proc. Am. Acad.* vol. xv. p. 32.

Aplopappus gymnocephalus, *DC. Prodr.* vol. v. p. 346.

Machæranthera setigera, *Nees in Linnæa*, vol. xix. p. 722.

Mistaking the proper colour of the ray-flowers of this plant, which indeed is not obvious in most of the dried specimens, and misled by a near resemblance to *Aplopappus spinulosus*, De Candolle not unnaturally referred it to the genus *Aplopappus*. Having named some very imperfectly-developed specimens of Berlandier, belonging to that genus, *Aplopappus phyllocephalus*, he gave to this the counterpart name of *gymnocephalus*, which name it now takes in *Aster*, unmeaning though it be. We have ascertained that it is also the *Machæranthera setigera* of Nees, much later published and with hardly any character. The true colour of the ray was noted long ago in Plantæ Wrightianæ, Part I., p. 97, as also the affinity to *Machæranthera*. This is confirmed by the annual or biennial duration of the root, one of the characteristics of this section of *Aster*. The species to which it is most allied are *A. canescens*, and *A. Towns-*

hendii (Tab. 6430), which proves to be *A. Bigelovii*, A. Gray in Pacif. R. R. Exped. vol. iv. p. 97, tab. 10.

This appears to be a common species throughout the northern and central parts of Mexico; and it occurs in almost all collections made in that region. It is here for the first time brought into cultivation, from seeds collected in 1878 by Drs. Parry and Palmer in the vicinity of San Luis Potosi. It is a fine acquisition to the gardens; and its rosy-purple rays distinguish it from all its near relatives.

Descr. A low species, branching directly from the biennial or annual root, attaining only a foot or two in height, clothed with a minute roughish pubescence, and with more bristly hairs on the stem, becoming viscid or glandular near the heads and especially on the involucre, and imparting a balsamic or terebinthine scent. *Leaves* beset with either distinct or obscure teeth, which are tipped with a prominent bristle; the veins obsolete; cauline about an inch long and somewhat amplexicaul; radical inclining to spathulate, four or five inches long. *Heads* terminating the few or more numerous branches, somewhat naked-pedunculate. *Involucre* half an inch broad and high; its bracts attenuate, recurving, in several ranks, giving a squarrose appearance; the short pubescence decidedly glandular. *Receptacle* flat, very strongly fimbrillate. *Rays* about fifty, crowded, rather broadly linear, half an inch long, rose-purple or with a tinge of lilac. *Disk-flowers* yellow and unchanging. *Style-arms* with oblong appendages. *Achenes* remarkably short, turbinate, hardly compressed, very villous. *Pappus* of rather scanty and unusually rigid bristles, all shorter than the corolla tubes, the outer series of bristles only half the length of the inner; ray-pappus decidedly shorter than that of the disk-flowers.—*A. Gray.*

Fig. 1, section through involucre and receptacle; 2, ray-flower; 3, style-arms of ditto; 4, disk-flower; 5, style-arms of ditto:—*all enlarged.*

Tab. 6550.

IMPATIENS amphorata.

Native of the Himalaya Mountains.

Nat. Ord. Geraniaceæ.—Tribe Balsamineæ.

Genus Impatiens, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 277.)

Impatiens *amphorata*; erecta, elata, ramosa, caule angulato, foliis petiolatis elliptico-ovatis v. lanceolatis acuminatis crenato-serratis, stipulis glanduligeris, racemis subterminalibus et in axillis superioribus sæpe subumbellatim v. verticillatim interruptis multifloris, pedicellis elongatis, floribus magnis pallide lilacinis roseo-maculatis, sepalis orbiculari-cordatis, vexillo orbiculari dorso cristato v. cornuto, alarum lobis lateralibus rotundatis terminali pendulo obtuso extus lobulato, labello magno cylindraceo obtuso, calcare brevi tenui incurvo, capsula lineari-elongata, seminum testa rugosa.

I. amphorata, *Edgew. in Trans. Linn. Soc.* vol. xx. p. 39; *Hook. f. Flor. Brit. Ind.* vol. i. p. 475.

I. longicornu, *Wall. Cat.* No. 4729 *in part.* I. longicornu, var. β. *Hook. f. et Thoms. in Journ. Linn. Soc.* iv. 148.

I. umbrosa, *Edgew. l. c. in part.*

I. picta, *Knowles et Westcott, Floral Cabinet*, t. 128.

One of the tallest and handsomest of Himalayan Balsams, though not attaining the stature of *I. Roylei*, Walp. (*I. glandulifera*, Royle, Ill. t. 28; *I. glanduligera*, tab. nost. 4020), with which it is often confounded in gardens, but which differs in having opposite or whorled leaves, bristle-shaped stipules, and club-shaped capsules. It is a common plant in the Western Himalaya, from Kashmir to the Nipal frontier in Kumaon, at elevations of 5000 to 8000 feet, where it was first distinguished by Mr. Edgeworth as a distinct species. Like all its congeners, it is a very variable plant, of which I have retained, in the Flora of British India, three forms, which are regarded as species by Mr. Edgeworth, namely: 1, *amphorata*, that here figured; 2, var. *umbrosa*, with glandular pedicels and the lip gradually narrowed into the incurved spur; and 3, *pallens*, with smaller paler flowers, eglandular pedicels, and the lip

gradually narrowed into a revolute spur. Of these forms, that called *pallens* by Edgeworth is the *I. bicolor* of Royle, a name which has priority, but does not apply to the prevalent form of the species, and which has further been inadvertently applied to a very different plant, the West African *I. bicolor* of this work (Tab. 5366).

I. amphorata was introduced into Kew by seed from Kashmir, and flowers annually abundantly in the months of August and September. It was in cultivation forty years ago in the Horticultural Gardens, having been sent from the gardens of Saharunpore, in North-West India, when these were under the superintendence of the late Dr. Royle.

Descr. Annual, three to six feet high, erect; stem as thick as the thumb at the base, succulent, branched upwards. *Leaves* three to six inches long, petioled, elliptic-ovate or lanceolate, acuminate, finely crenate-serrate, bright green, with often pink edges and midrib; petioles with glands for stipules. *Racemes* two to five inches long, in the upper axils, many-flowered; pedicels slender, one-half to three-fourths of an inch long, alternate or sub-whorled or subumbellate; bracts ovate, green, very deciduous. *Flowers* one and a half inches long, pale purple, suffused and speckled with rose-red; sepals broadly orbicular-cordate, acute, greenish; standard orbicular, two-lobed or notched at the top, crested or spurred behind; wings two-thirds of an inch long, lateral lobe rounded, terminal pendulous obtuse with a lobule on the outer margin; lip cylindri-saccate, tip rounded with an abrupt short slender red incurved spur. *Capsule* one and a half inches long, linear, acuminate, grooved. *Seeds* with a rugose blackish testa.—*J. D. H.*

Fig. 1, sepal; 2, staminal column; 3, seed; 4, embryo :—*all enlarged.*

Pl. 6557.

A.B. del J.N Fitch Lith

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TAB. 6551.

CLADRASTIS AMURENSIS.

Native of Amur-land.

Nat. Ord. LEGUMINOSÆ.—Tribe SOPHOREÆ.

Genus CLADRASTIS, *Rafin*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 554.)

CLADRASTIS *amurensis*; arbor parva, partibus novellis sericeo-pubescentibus, foliis impari-pinnatis, foliolis 3–4-jugis suboppositis breviter petiolatis ovatis v. ellipticо-ovatis obtusis, basi interdum cordatis, terminali subsimili, glabris v. sparse pilosis, racemis subterminalibus simplicibus v. basi ramosis breviter pedunculatis elongatis densifloris, floribus sub-3-nis pedicellatis albo-virescentibus, pedicellis interdum 2-floris bracteas minutas excedentibus, legaminibus oblongo-lanceolatis v. linearibus oligospermis.

C. amurensis, *Benth. in Gen. Pl.* vol. i. p. 554.

MAACKIA amurensis, *Rupr. et Maxim. in Bull. Acad. St. Petersb.* vol. xv. p. 143, t. 1, f. 2; *Maxim. Prim. Fl. Amur.* 87, t. 5; *Morren. Belg. Hortic.* 1870, 301, t. 18; *Regel Gartenfl.* 1875, 152, *cum Ic. Xylog.*

It is not to be wondered at that, when the subject of the present plate was first described, it was supposed to be a new genus; for at that time the close affinity of the Floras of North-Eastern Asia and the Eastern United States was not generally recognized, and the affinity of *Maackia* with the hitherto monotypic genus *Cladrastris* (*Virgilia lutea* of our gardens) could not have been anticipated. Nevertheless these two geographically widely severed plants are unquestionably congeneric, and not to be separated by even a sectional character. It thus adds another to the remarkable assemblage of genera found in the two countries indicated, but not in the intervening territories of Western America, and of which Professor Asa Gray has made such good use in tracing the origin and migrations of the North American Flora.

Cladrastis amurensis is a small tree, attaining forty feet in height, discovered in Manchuria, where it ranges in the basin of the Amur river from lat. 50° 15′ to 52° 20′ N.

APRIL 1ST, 1881.

and it has also been found in the Japanese island of Jesso. Like *C. virginica* (*Virgilia lutea*), it is perfectly hardy in England, and, unlike the last-named plant, it flowers abundantly at Kew in the month of August, fruiting in October. The pods vary much in shape and size, in native specimens from one and a quarter to two inches long, whilst at Kew they attain three and a half inches in length. The Royal Gardens are indebted to Mr. Van Volxem, of Brussels, for specimens which are planted in the Leguminous beds of the Arboretum.

Descr. A tree forty feet high, with a trunk six inches in diameter, and spreading and drooping densely leafy branches; young parts silkily pubescent, as are the rounded bud-scales. *Leaves* alternate, four to six inches long, pinnate; pinnæ three to four pair, subopposite, shortly petioled, two to three inches long, ovate ovate-cordate or elliptic-ovate, obtuse or subacute, membranous, glabrous or sparsely hairy beneath, nerves slender; petiole terete. *Racemes* four to six inches long, subterminal, drooping with ascending flowers, shortly peduncled, very dense-flowered, cylindric. *Flowers* one-third of an inch in diameter, one to three together, greenish-white; pedicels rathar larger than the calyx; bracts very small. *Calyx* shortly cylindric, obtusely shortly two-lipped. *Standard* obovate-spathulate, recurved, notched, gradually narrowed into the claw; wings linear-oblong, obtuse, with a deeply cordate base, claw slender; keel oblong, obtuse. *Ovary* pubescent; style very short. *Pod* two to three and a half inches long, linear or elliptic-lanceolate, acute at both ends, much compressed, membranous, veined, brown. *Seeds* oblong.—*J. D. H.*

Fig. 1, flower; 2, calyx staminal bundle and ovary, cut vertically; 3, calyx; 4, standard; 5, wings; 6, keel; 7, stamens; 8, ovary; 9, pod; 10, seed:—*all but* 9 *and* 10 *enlarged*.

A.B.del J.N.Fitch,Lith.

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Tab. 6552.

AQUILEGIA formosa.

Native of the Rocky Mountains and California.

Nat. Ord. Ranunculaceæ.—Tribe Helleboreæ.

Genus Aquilegia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 8.)

Aquilegia *formosa*; caule gracili erecto superne puberulo 1–3-pedali, foliis radicalibus biternatis segmentis ultimis cuneatis obtuse 3–5 fidis ∝-lobulatis, floribus 1–2 poll. diam. lateritiis v. rubris sepalis intus petalisque aureis, sepalis ovato-lanceolatis acuminatis, petalorum limbo sepalis dimidio breviore orbiculari v. late ovato-orbiculari apicibus rotundatis v. apiculatis, marginibus recurvis, calcare recto brevi v. elongato apice vix incurvo. Tab. 6552 A.

A. formosa, *Fisch. in DC. Prodr.* vol. i. p. 50; *Torr. et Gr. Fl. N. Am.* vol. i. p. 30.

Var. *flavescens*, floribus aureis. A. flavescens, *Wats. Bot. Calif.* vol. i. Tab. 6552 B.

The more the American and Eastern Asiatic Columbines are brought under cultivation, the more difficult does it become to distinguish the species proposed by Russian and American authors; and I very much suspect that ultimately there will be recognized only one or two sportive forms of the genus. Of the characters chiefly relied upon for distinguishing the forms, none are constant, and least of all the two most conspicuous, the length of the spur and colour of the flower. In respect of colour, and, indeed, all other characters, *A. formosa* comes nearest to *A. canadensis*, Linn. (Tab. nost. 246), which varies from red to orange and yellow, from which it differs in the larger flowers and in the much longer and more slender spurs, and in the very open perianth. From *A. leptoceras* of Nuttall (not of Fischer) (Tab. nost. 4407), and its var. *chrysantha* (Tab. nost. 6073), it differs in the much smaller petals, which are rounded, with the limb more cupped, and not dilated beyond the middle, and especially in the much fewer stamens of more unequal length, and more protruded from the flower. *A. leptoceras* has indeed been referred by Watson, in the Botany of California, to the lovely *A. cærulea* (Tab. nost. 5477), the pride of the Rocky Mountain Flora, whose flowers vary in colour from the most beautiful azure blue

to lilac, orange, golden-yellow, and white. This latter species is, however, abundantly distinguished by the shorter filaments and anthers more collected into a head.

Still another form of Western North American Columbines is the *A. truncata*, Fisch. and Mey. (Regel Sert. Petrop. 1852, t. 11), retained as a species peculiar to California by Watson in the Botany of California (p. 10), (*A. eximia*, Van Houtte in Flor. des Serres, 1857, t. 1188; *A. Californica*, Lindl.), but regarded by others as a variety of *formosa*. It is even nearer to *A. canadensis* than is *A. formosa*, having short thick spurs and very small sepals and a small limb to the petal. I have gathered it in the Wellingtonia Groves of the Sierra Nevada. Lastly, there is *A. flavescens*, Wats. from the Rocky Mountains, which appears to me to be another form of *formosa*, with pale golden flowers. At fig. B of the accompanying drawing is represented what I take to be this latter plant. It is remarkable that in both the forms here figured the spurs are twice as long as in any of the numerous Herbarium specimens I have examined of *formosa*, *truncata*, or *flavescens*, or than they are in any other *Aquilegia* but the forms of *A. cærulea*.

All these Aquilegias are natives of the margins of mountain streams in Western North America, and have been introduced into the Royal Gardens at various times, flowering in July and August.

DESCR. *Stem* very slender, one to three feet high, more or less glandular, hairy above. *Leaves* biternate, ultimate segments cuneiform, obtusely lobulate and crenate. *Flowers* on very slender peduncles, one and a half to two inches long, brick-red and yellow or wholly yellow. *Sepals* lanceolate, acuminate, horizontally spreading in the red-flowered forms with a golden band down the centre. *Petals* with the limb suborbicular in outline, tip rounded or subacute, margins rather recurved; spur long or short, sometimes one and a half inches long, tips scarcely incurved, slightly swollen. *Filaments* far exserted, of very different lengths, outer almost twice as long as the inner; anthers scattered. *Styles* shorter than the longest stamens.—*J. D. H.*

Fig. A, A. formosa and B, var. flavescens—*both of the natural size*. Fig. A, 1, section of flower; 2, stamen; 3, carpel laid open; *all of* A. formosa; *all except* A 1, *enlarged*.

M.S del, J.N.Fitch, Lith

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Tab. 6553.

KNIPHOFIA Uvaria *var.* maxima.

Native of the Orange Free State.

Nat. Ord. Liliaceæ.—Tribe Hemerocallideæ.

Genus Kniphofia, *Moench.*; (*Baker in Journ. Linn. Soc.* vol. xi. p. 360.)

Kniphofia *Uvaria* var. *maxima*; dense cæspitosa, foliis linearibus e basi 1½ poll. lato ad apicem acuminatum sensim attenuatis glauco tinctis acute carinatis margine vix serrulatis, scapo valido 4–6-pedali, racemis subspicatis oblongo-cylindricis densis, floribus deflexis, pedicellis brevissimis, bracteis lanceolatis pedicellis multo longioribus, perianthio cylindrico 15–18 lin. longo segmentis **lanceolato-deltoideis, genitalibus longe exsertis.**

This is the plant now widely spread in gardens under the name of *Kniphofia* or *Tritoma maxima* or *grandis*. Though for garden purposes it has an individuality of its own, I cannot find any characters to separate it specifically from the well-known Red-hot Poker plant, *Kniphofia Uvaria* (Bot. Mag. Tab. 4816), from which it differs by its more robust habit, longer and broader leaves, stouter scape and rather longer flowers, with more decidedly exserted stamens and style. Our drawing was made from plants which flowered in the herbaceous ground at Kew in October, 1879, which we received from Max Leichtlin, Esq. It is a native of the Orange Free State, whence we possess dried wild specimens gathered by Mr. Thos. Cooper in 1862. We have a dried garden specimen from Mr. Cooper, in which the flowering scape, including the raceme, was nearly seven feet long.

Descr. Densely tufted. *Leaves* linear, four or five feet long, tapering gradually from a base an inch and a half broad to a long acuminate point, glaucous, acutely keeled, not serrulate on the edge. *Scape* four or five feet long, as thick as a man's thumb, obtusely angled by ridges decurrent from the bracts. *Racemes* dense, subspicate,

oblong-cylindrical, a foot or more long; flowers all deflexed; pedicels very short; bracts lanceolate, a quarter to half an inch long. *Perianth* cylindrical, an inch and a quarter or an inch and a half long, yellow, more or less tinted with red; segments lanceolate-deltoid. *Stamens* and style both considerably exserted.—*J. G. Baker.*

Fig. 1, stamens and pistil; 2, anthers; 3, ovary; 4, horizontal section of ovary: —*all enlarged.*

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Tab. 6554.

HECHTIA cordylinoides.

Native of Mexico.

Nat. Ord. Bromeliaceæ.—Tribe Dyckieæ.

Genus Hechtia; (*Klotzsch in Zuccar. Plant. Nov. Hort. Monac.* fasc. iv. p. 239, t. 6.)

Hechtia *cordylinoides;* acaulis, foliis multis dense rosulatis linearibus bipedalibus strictis apice pungentibus facie nitidis obscure viridibus dorso albo-incanis verticaliter lineatis margine aculeis corneis falcatis pungentibus armatis, pedunculo valido bipedali foliis pluribus linearibus subscariosis prœdito, floribus in paniculam amplam ramis multis patentibus superioribus simplicibus cylindricis subspicatis inferioribus parce ramosis dispositis, pedicellis brevissimis basi minute bracteatis, floribus parvis albis segregatis, sepalis oblongo-deltoideis petalis oblongis duplo brevioribus, staminibus in plantam masculam exsertis, filamentis subulatis.

This fine new Bromeliad is just like the three *Hechtias* already known (*H. glomerata*, *Gheisbreghtii*, Bot. Mag. Tab. 5842, and *argentea*) in habit and leaf, but it differs from them entirely in inflorescence, its minute white flowers arranged in ample panicle, recalling *Cordyline* and *Dasylirion* more than any recognized Bromeliaceous type. The genus is exclusively Mexican, and represents in the northern half of the continent *Dyckia* of Brazil and the Argentine territory, from which it differs mainly by its polygamo-dioicous flowers. I believe that *Hechtia* is a perfectly good genus, and there is certainly no foundation, as a glance at Zuccarini's Memoir will show, for the idea thrown out by Dr. Karl Koch (Ind. Sem. Hort. Berol, 1863, Appendix, page 3), that *Hechtia* of Klotzsch is a different thing from *Herhtia* of Zuccarini. Our drawing of *H. cordylinoides* was made from a plant that flowered in the Cactus House at Kew in the summer of 1880. We have had the plant some time, and have no precise record of its history, but there is in the British Museum a dried specimen of the same or a closely-allied species gathered by Dr. Schott

(No. 625) on the Cerro de Maxeana, in the province of Yucatan. The plant forms a very interesting addition to our small stock of Bromeliads from the subtemperate zone, which can be grown under the same conditions as ordinary Aloes, Agaves, and Cacti.

DESCR. *Rosette* sessile, four feet in diameter. *Leaves* about a hundred, very thick and rigid in texture, arching but slightly, linear, two feet long, an inch and a half broad, and half an inch thick at the base, tapering gradually to a pungent point, dull green, smooth, shining, and nearly flat on the face, white, with fine vertical lines down the convex back, armed down the edges with pungent falcate deltoid-cuspidate brown horny prickles, half to one inch apart. *Peduncle* stout, erect, about two feet long, furnished with several linear subscariose bract-like leaves. *Flowers* polygamous, arranged in an ample panicle five or six feet long, with very numerous spreading cylindrical shortly-peduncled branches, the upper ones simple, the lower with a couple of short branchlets from the base; pedicels very short, subtended at the base by a minute deltoid membranous bract; main spikes four to six inches long, not more than half an inch in diameter when expanded; rachis green, sulcate, obscurely pilose. *Perianth* white, not more than an eighth of an inch long; sepals oblong-deltoid, greenish, half as long as the oblong petals. *Stamens* in the specimen figured fully developed, a little exserted; filaments subulate; anthers minute, oblong, versatile. *Ovary* rudimentary, with three distinct styles.—*J. G. Baker.*

Fig. 1, a closed flower; 2, an open flower; 3, a flower cut down the middle; 4, 5, two views of the anther; 5, 6, rudimentary pistil of the male plant:—*all more or less magnified.*

1

2

M S

Tab. 6555.

BEGONIA socotrana.

Native of the Island of Socotra.

Nat. Ord. Begoniaceæ.

Genus Begonia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 841.)

Begonia *socotrana;* sparse patentim hirsuta, erecta, foliis peltatis orbicularibus disco intruso infundibulariformi marginibus recurvis crenatis, floribus monoicis roseis masculis numerosis, perianthii segmentis 4 obovatis, staminibus in globum confertis, filamentis brevibus liberis, antheris clavatis recurvis apice rotundata postice dehiscentibus, floribus fœmineis solitariis, perianthii segmentis 6 elliptico-obovatis, stylis brevibus ramis patenti incurvis non tortis, stigmatibus cordatis linea papillosa conjunctis, ovario 3-gono 3-loculari, loculo dorsali alato, placentis integris.

B. socotrana, *Hook. f. in Gard. Chron.* 1881, p. 8, *cum ic. xylog.*

A beautiful species, of which tubers were brought by Dr. I. B. Balfour from the dry and hot island of Socotra, in the Indian Ocean, off the coast of Arabia, one of the last places in the world in which a Begonia could have been expected to occur. From the geographical position of that island the affinity of this discovery may be conjectured to be either Asiatic or African, and, upon the whole, though referable to none of the sixty sections of the genus, founded by Klotzsch and A. de Candolle, it must, I think, be placed in the African one of *Augustia*, from the characters of which it differs chiefly in the male perianth having four segments, in the shorter filaments, rounded top of the anther, in the six lobes of the female perianth (instead of five), and the untwisted arms of the style—characters all of which, except the last, occur in the Natal *B. geranioides*, Hook f. (Bot. Mag. Tab. 5583), to which *B. socotrana* is unquestionably closely allied. This is only one of the many most interesting plants brought by Dr. I. B. Balfour from an island which he alone has had the good fortune to explore, and the publication of the results of which explora-

tion are awaited with impatience by botanists no less than horticulturists.

The Royal Gardens are indebted to Dr. Balfour for tubers, which he liberally presented to that institution in April, and which flowered in December, a season when such a plant is doubly welcome to the cultivator, as the similar Begonias of the Andes, which make so magnificent a show in the conservatory during the summer and autumn months, are then all long past flowering. It is easily propagated by its tubers, and as the Kew plants continued in flower for two months in a warm conservatory, it will, doubtless, prove a great favourite.

Descr. Erect, stout and succulent, sparingly branched, six to ten inches high, sparsely hairy all over the stem and leaves. *Leaves* orbicular, peltate, four to seven inches in diameter, centre with a funnel-shaped depression, margin recurved and crenate. *Flowers* monœcious, bright rose-pink, one female and several males on the same inflorescence. *Male flower* four inches in diameter; perianth-segments four, obovate. *Stamens* in a small globose head, filaments very short; anthers clavate, recurved, tip rounded. *Female flower* rather smaller than the male; perianth-segments six, oblong, obtuse. *Styles* very short, stigmas horse-shoe shaped, arms not twisted, united by a pappillose belt. *Ovary* three-angled, one angle winged; placentas entire. —*J. D. H.*

Fig. 1, ovary; 2, the same cut open transversely :—*both enlarged.*

1.

2.

3.

Vincent Brooks Day & Son Lith.

Tab. 6556.

MUSSCHIA aurea.

Native of Madeira.

Nat. Ord. Campanulaceæ.—Tribe Campanuleæ.

Genus Musschia, *Dumort.*; (*Benth. et Hook f. Gen. Pl.* vol. ii. p. 560.)

Musschia *aurea*; acaulis v. caule brevi valido, glaberrima, nitida, foliis confertis breviter crasse petiolatis elliptico-lanceolatis utrinque angustatis subdupli- v. triplicato serratis coriaceis, panicula terminali erecta strieta pyramidata ramis apices versus cymiferis, bracteis foliaceis integerrimis v. subserratis, cymis 2–5-floris, floribus erectis, pedicellis crassis incurvis, calycis tubo obconico lobis magnis ovatis acutis erecto-patentibus, corollæ aureæ segmentis patentibus v. reflexis lanceolatis acuminatis calycis lobos æquantibus.

M. aurea, *Dumort. Comm. Bot.* 1823, p. 28; *Alph. DC. Monog. Campan.* p. 368, *et in Prodr.* vol. vii. p. 495; *Lowe Man. Fl. Madeir.* vol. i. p. 574.

Campanula aurea, *Linn. f. Suppl.* p. 141; *Ait. Hort. Kew.* ed. 2, vol. i. p 351; *Vent. Jard. Malm.* t. 116; *Duhamel traite des Arbres.* vol. iii. p. 169. *cum ic.*; *Jacq. Hort. Schœnb.* vol. iv. t. 472; *Ker Bot. Reg.* t. 57.

This is the most beautiful of the indigenous plants of Madeira, of which Mr. Lowe, in his Manual of the Flora of that island, says: "Nothing can exceed the singularity and splendour of a fine panicle as it occurs on its native rocks; almost wholly of a rich golden-yellow, and shining as if varnished, in full contrast with the equally bright shining dark green foliage." And again: "Had this plant grown in Italy, it might well be supposed to have suggested the idea of the famous golden branch of the Cumæan Sybil to the Roman poet." Though more beautiful, in point of singular appearance it falls short of its only congener, *M. Woollastoni*, also a native of Madeira, figured at Tab. 5606 of this work, which has larger and very pale flowers, surmounted by a columnar green style with five spreading and recurved arms, each one-half to nearly an inch long. With regard to this last species, it may be well to record here Mr. Lowe's observation (Manual, p. 577) that the flowers in its native state are much more coloured

than under cultivation, and the corolla is of a dull ochreous-yellow streaked with dull red, giving it somewhat of a purpurascent orange or lateriteous tint.

M. aurea is a common plant on the sea cliffs of Madeira, and also ascends the ravines, rooting deeply into fissures of perpendicular dry sunny rocks; it was introduced into England in 1777 by Masson, a collector sent from Kew to South Africa, who visited Madeira *en route* to his destination. The specimen figured flowered at Kew in July and August of last year. The whole plant abounds in milky juice.

Descr. *Stem* none or in old plants a few inches (rarely a foot) long, cylindric, thicker than the thumb, fleshy, scarred, rarely branched. *Leaves* in a single terminal tuft, dark green, varnished and shining, five to six inches long by three to three and a half wide, very narrow, petioled, elliptic-lanceolate, doubly or trebly serrate; petiole stout, one to two inches long. *Panicle* terminal, one to one and a half feet high, pyramidal, stout, erect; bracts leafy, sessile, entire or subserrate. *Flowers* about three together in cymes towards the ends of the branches, one and a half inches long and as much in diameter, erect, on short stout upcurved pedicels. *Calyx-tube* obconic, five-angled, yellow with five strong green ribs; lobes half to three-quarters of an inch long, broadly ovate, acute, green, spreading, green with a golden-yellow midrib. *Corolla* bright golden-yellow, tube short, slender; lobes lanceolate, acuminate, spreading, about as long as the calyx-lobes. *Stamens* with dilated filaments and narrow linear mucronate anthers. *Style* stout, green, not much overtopping the anthers, stigmatic-arms radiating, greenish. *Capsules* bursting between the ribs.—*J. D. H.*

Fig. 1, flower cut open vertically; 2 and 3, back and front view of stamen:—*both enlarged.*

1
3
5
A
B

Tab. 6557.

MELIANTHUS Trimenianus.

Native of South Africa.

Nat. Ord. Sapindaceæ.—Tribe Melianthеæ.

Genus Melianthus, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 411.)

Melianthus (Diplerisma) *Trimenianus;* foliolis linearibus loriformibus marginibus revolutis integerrimis v. obtuse serratis subtus albo-villosis, stipulis subulatis, racemis erectis, floribus verticillatis coccineis, petalorum unguibus ad commissuras villosis ceterum glaberrimis, capsula glabra tetraptera.

M. Trimenianus, *Hook. f. in Trimen Journ. Bot. N.S.* vol. ii. p. 353, t. 133.

For a knowledge of this singular and beautiful plant I am indebted to Sir Henry Barkly, K.C.B., who, when Governor of the Cape of Good Hope, discovered it during a visit to Little Namaqua Land, a district bordering the Atlantic to the northward of the Cape Colony, from whence he sent to me dried specimens, together with a drawing by Lady Barkly, as a new species of *Melianthus*, with scarlet flowers. These specimens, together with ripe seeds from which the plants in the Royal Gardens are now growing, enabled me to describe the plant fully in Trimen's Botanical Journal cited above, where I took the opportunity of discussing its affinity with the beautiful *Greyia Sutherlandi* (Tab. 6040) and strengthening my reasons for regarding both these anomalous genera as referable to the natural family of *Sapindaceæ*.

The seeds of *M. Trimenianus* germinated readily, but the plants kept in the conservatory at Kew made slow progress compared with one which was sent to Mr. Hanbury's garden at Mortola, near Mentone, on the Riviera, where it flowered for the first time and fruited in 1879, when the fruiting spike figured at B was kindly sent to me by Mr. Thomas Hanbury, through the post-office. In December, 1880, it again flowered at Mortola, and Mr. Hanbury sent me the fine raceme figured here; it flowered at Kew for the first time early in the same year, but very poorly in comparison. In its native country *M. Trimenianus* is an erect shrub, two or three feet high;

but in the Cape House at Kew it is trained against a rafter, exactly as the long-known *M. major* is in the Temperate House, and grows six or seven feet high. The smell of the foliage is even stronger than that of the last-named plant, and exactly like it.

In giving the name of *Trimenianus* to this plant, I had the double pleasure of commemorating the services rendered to botany by Dr. Trimen, F.L.S., then the Editor of the Journal of Botany, and now Director of the Ceylon Botanical Gardens, it which it was first described; and those rendered to entomology by his brother, Roland Trimen, F.L.S., of Cape Town, who accompanied Sir Henry Barkly in his tour in Namaqua Land, where this plant was discovered.

Descr. A branching shrub. *Leaves* three to five inches long, shortly petioled, glabrous above, white-tomentose beneath, pinnate; pinnules six to ten pair, opposite, linear or strap-shaped, coriaceous, often curved, obtuse or acute; margins recurved, quite entire or obtusely coarsely serrate; rachis winged, jointed at the insertion of the pinnules; margins of wings revolute, like those of the pinnules; stipules adnate at the base to the petiole, subulate. *Racemes* terminal, strict, erect, four to eight inches long; peduncle and rachis stout, stiff; flowers in whorls of four to six; bracts one-third of an inch long and under, ovate, acuminate, deflexed, equalling the pedicels. *Calyx* two-thirds of an inch long, base oblique; segments oblong, acuminate, deflexed after flowering, posterior lobe broad or concave, three-lobed, mid-lobe often produced, lateral slender ascending. *Petals* four, deciduous, clawed, lanceolate, declinate, acuminate, waved, scarlet; claws fleshy, cohering by their woolly margins. *Disk* fleshy, horse-shoe shaped. *Stamens* four, persistent, didynamous, inserted within the disk, two posterior shorter, their filaments carinate below. *Ovary* oblong, four-celled; style elongate, ascending; ovules four, two-seriate in each cell. *Fruit* three-fourths of an inch in diameter, cruciately four-winged, wings reticulated, cells two- to four-seeded. *Seeds* very various in shape, pyriform or orbicular.

Fig. A, flowering specimen; 1, vertical section of flower, *of the natural size;* 2, the same, *enlarged;* 3, stamen, and 4, apex of style and stigma, *both much enlarged;* 5, fruit, *of the natural size.*

Tab. 6558.

PROTEA penicillata.

Native of South Africa.

Nat. Ord. Proteaceæ.—Tribe Proteeæ.

Genus Protea, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 169.)

Protea *penicillata;* fructicosa, robusta, tota luxe sericeo-pilosa demum glabra, foliis sessilibus oblongis lineari-oblongis v. oblongo-lanceolatis glaucescentibus obtusis v. acutis coriaceis obsolete venosis marginibus late recurvis interdum subtortis, capitulo sessili magno turbinato v. late cylindraceo, involucri squamis numerosis erectis imbricatis obtusis sericeo-pilosis viridibus, infimis brevibus sequentibus sensim longioribus oblongis, intimis lineari-oblongis flores subæquantibus truncatis rotundatis v. apiculatis flavidis, perianthio sesquipollicari sericeo segmentis apice barbatis, stylo gracili recto, stigmate obscuro.

P. penicillata, *E. Meyer in Plant. Drège; Meissner in DC. Prodr.* vol. xiv. pars 1, p. 235.

P. Mundii, *Klotzsch in Ott. et Dietr. Gartenzeit*, 1838, p. 113.

P. longiflora, *var.* Mundii, *Link, Kl. et Ott. Ic. Pl. Rar.* vol. i. p. 55, t. 22.

P. ovalis, *Buek in Pl. Drège.*

The Cape *Proteaceæ*, the favourites of our grandfathers, may be said to have "gone out of cultivation," so completely have they been replaced by other tribes of more or less deservedly popular, but neither more interesting nor more curious plants. Of *Protea* alone, twenty-three Cape species were cultivated in Kew at the date of the publication of the second edition of the "Hortus Kewensis" (1810), and twelve are figured in the Botanical Magazine, the last, *P. grandiflora*, Tab. 2447, in the year 1823. No less than twenty-three are figured in "Andrew's Botanical Repository," published between the years 1797 and 1804. This neglect of a whole genus of most conspicuous plants which forms a grand feature in the vegetation of one of England's greatest colonies, is not due to want of beauty, for some of the formerly cultivated species are amongst the handsomest of plants, whether for size, form, or colour of inflorescence; and would carry away the first prize at any horticultural show. Such are—*P. cordifolia* (Tab. 649), with its scarlet branches, blue leaves, and gorgeous heads of ruby-coloured bracts; *P. lepidocarpa* (Tab. 674), with leaves edged with red and jet-black velvetty involucral scales bordered with a silver

fringe; *P. cynaroides* (Tab. 770), with golden-edged leaves and pink heads half a foot in diameter; *P. speciosa* (Tab. 1183), with silver-edged leaves, heads six inches long, and flesh-coloured bracts, with a border of black fringed with silver; *P. latifolia* (Tab. 1717), with cordate leaves bordered with pink, and a crown of stamens three inches high and six in diameter, surrounded with spreading rose-coloured bracts four inches long and fringed with silver. Of these and many other such, the present and even the past generation of horticulturalists know absolutely nothing; this is mainly due to the introduction of those improved systems of heating houses and that incessant watering, that favours soft-wooded tropical plants, and is death to the Proteas of South Africa and the Banksias of Australia. Nevertheless, that these, and many others requiring like treatment, will be re-introduced, aud will be the wonders of the shows of many successive seasons, is as certain as that they once were the glories of the old hot-air heated kilns, that our forefathers called stoves, in which Orchids quickly perished, and Banksias and Proteas throve magnificently.

Protea penicillata is one of the least attractive of the whole genus, and is no encouragement to the cultivators of the tribe; its singular appearance and rarity being its only recommendation. The plant here figured flowered in August, 1880, and was raised from seed sent by Mr. MacOwan, late Principal of Gill College, Somerset East, an excellent botanist, to whom the Royal Gardens are indebted for many valuable seeds and bulbs, as well as herbarium specimens, and who has lately accepted the Directorship of the Botanical Gardens at Cape Town, which are to be established on a new footing. The seeds were collected on the Boschberg Mountains in Somerset East, at an elevation of 4000 feet, and the dried specimens, which correspond with the cultivated ones, differ from others gathered nearer Cape Town, in the longer styles, narrowed to the obscurely thickened stigma; the styles of most of Drège's original specimens of *P. penicillata* being shorter, with decidedly capitate stigmas. I find, however, no other difference, and this may be sexual.—*J. D. H.*

Fig. 1. flower; 2, base of perianth and filament; 3, anther; 4, ovary cut open, showing the ovule:—*all enlarged.*

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Tab. 6559.

JASMINUM GRACILLIMUM.

Native of Borneo.

Nat. Ord. Oleaceæ.—Tribe Jasmineæ.

Genus Jasminum, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 274.)

Jasminum *gracillimum;* patenti-hirsutum, ramis elongatis gracillimis teretibus decurvis, foliis 1–1½-pollicaribus oppositis breviter petiolatis ovato-cordatis acutis v. acuminatis subtus hirsutis, paniculis globosis densifloris pendulis, floribus breviter pedicillatis albis suaveolentibus, corolla alba, tubo lobis calycinis filiformibus patentim pilosis subduplo longiore, limbi 1½ poll. diametr. lobis ad 9 elliptico-lanceolatis acutis.

J. gracillimum, *Hook. f. in Gard. Chron.* 1881, p. 9, *cum Ic. Xylog.*

A very near ally of the well-known *Jasminum pubescens* of India and China, which is the type around which are to be ranged a good many closely-allied species, differing in habit, in the amount of pubescence, and in the size and number of flowers, and of the divisions of the corolla, all of them natives of Eastern Asia and its islands. Of these, *J. gracillimum* is one of the most distinct in its graceful habit and in the abundance of its large sweet-scented drooping flowers, which are also more copiously produced, in which respects I know of none to compare with it. It appears to be a small species; the pot-plant exhibited by Messrs. Veitch at the Royal Horticultural Society, and which was in full flower, was about three feet high, branched from the base, the long very slender branches springing from low down on the stem and curving over on all sides, weighted down by terminal globose panicles as large as the fist.

J. gracillimum is a native of Northern Borneo, where it was discovered by Mr. Burbidge (the author of the charming little work on that island, recently published under the title of "The Gardens of the Sun") when collecting for Messrs. Veitch, with whom the plant flowered last December.

May 1st, 1881.

Descr. A shrub; branches many from the root, ascending and recurved, very slender, spreading on all sides, and as well as the petioles and branches of the inflorescence, clothed with rather long spreading hairs. *Leaves* one to one and a half inches long, opposite, shortly petioled, ovate-cordate, acute or acuminate, hairy beneath, bright deep green. *Heads* of flowers globose, as large as the fist, dense. *Flowers* shortly pedicelled, white, one and a quarter inches in diameter, sweet-scented. *Calyx* teeth subulate, half as long as the corolla-tube. *Corolla-tube* two-thirds of an inch long; lobes about nine, elliptic-lanceolate, acute. —*J. D. H.*

Fig. 1, flower cut longitudinally; 2, calyx; 3, stamen; 4, stamens and lip of style and stigma; 5, stigma :—*all but figs.* 1 *and* 2 *enlarged.*

A.R. del. J.N. Fitch Lith.

Vincent Brooks Day & Son Lith.

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Tab. 6560.

POTENTILLA (Ivesia) unguiculata.

Native of California.

Nat. Ord. Rosaceæ.—Tribe Potentilleæ.

Genus Potentilla, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 620.)

Potentilla (Ivesia) *unguiculata*; sericeo-villosa, caule gracili sparse folioso superne paniculatim ramoso, foliis radicalibus anguste lineari-elongatis ob folia imbricata cylindraceis, foliis sessilibus 3-foliolatis, foliolis elliptico-lanceolatis acutis integerrimis, floribus laxe paniculatis, calycis tubo campanulato lobis ovatis acuminatis, petalis orbiculatis calyce paulo longioribus albis ungue subelongata, staminibus 2-seriatis numerosis, filamentis filiformibus, carpellis 3–8 glabris, stylo gracili.

Ivesia unguiculata, *Gray in Proc. Amer. Acad.* vol. vii. p. 339; *S. Watson, l. c.* 448, *et in Bot. Calif.* vol, i. p. 183.

A very delicate silvery plant, with pearly-white flowers, a native of the famous Yosemite Valley in California, where it grows in meadows at an elevation of 8000 feet above the sea-level. In a young state and in dry weather it forms a really charming herbaceous border- or rock-plant, but when dashed by the rains of an English summer (an ordeal it is not exposed to in its native country), it presents a miserable and draggled appearance, its beautiful leaves being sometimes beaten down and almost buried in the soil. It belongs to a section of *Potentilla* which has been erected into a genus under the name of *Ivesia*, consisting of nearly a dozen species, natives of the mountains of Western North America, with usually small imbricating leaflets that give the leaf more or less of a cylindrical form; this character, combined with others appertaining to the first discovered species, appeared to suffice to establish the genus as distinct from *Potentilla* and *Horkelia*. Subsequent discoveries, however, have invalidated the claims of *Ivesia*, and it was reduced to *Potentilla* in the "Genera Plantarum," respecting which view Dr. Gray says under *Horkelia Bolanderi* (Proc. Amer. Acad. vol. vii.

p. 338): "This and the following (*Ivesia tridentata*) are among the species which go far to justify the views of Bentham and Hooker, and now also of Engelmann, who would combine *Horkelia* and *Ivesia* with *Potentilla*. I am reluctant to adopt this conclusion." I have only to add that, since the publication of the "Genera Plantarum," I have seen two species of *Ivesia* living in Western N. America, together with the one here figured at Kew, and have reconsidered the question of its generic validity after studying the rich Himalayan collections of *Potentilla*, and that my opinion is confirmed as to the impossibility of maintaining it.

I. unguiculata was raised from seed sent by Dr. Gray, and flowered in July last.

Descr. Clothed with soft-shining silky hairs. *Stem* a span to a foot high, sparsely leafy, very slender, paniculately branched above. *Radical leaves* four to eight inches long, petioled, narrowly linear in outline, not half an inch in diameter, flexuous, appearing cylindrical from the closely-packed leaves, which are sessile, and consist of three sessile elliptic-lanceolate acute leaflets, of which the middle or longest is about a quarter of an inch long; rachis and petiole very slender, cauline leaves more sessile, with more scattered leaflets; stipules lanceolate. *Flowers* half an inch in diameter, pearly-white, in open panicles with slender spreading branches peduncles and pedicels; bracts at the lower forks leafy, at the upper ovate-lanceolate. *Calyx-tube* narrowly campanulate; lobes ovate, acute, spreading and reflexed. *Petals* rather longer than the calyx-lobes, rounded, with rather long narrow claws. *Stamens* on the throat of the calyx-tube, numerous, in two series, filaments filiform; anthers minute. *Carpels* three to eight, minute, glabrous; style filiform.—*J. D. H.*

Fig. 1, leaf; 2, flower; 3, the same cut vertically; 4, stamen; 5, ovary and style: —*all enlarged.*

A B del J N Fitch Lith

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Tab. 6561.

CLERODENDRON TRICHOTOMUM.

Native of Japan.

Nat. Ord. Verbenaceæ.—Tribe Viticeæ.

Genus Clerodendron, *Linn.*: (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1155.)

Clerodendron *trichotomum;* fruticosum, glabrum, pubescens v. subtomentosum, ramis cylindraceis crassiusculis, foliis amplis oppositis longe petiolatis basi triplinerviis opacis integerrimis v. margine obtuse subserratis inferioribus magnis trilobis superioribus lato ovatis v. rotundato-ovatis longe acuminatis, cymis terminalibus et axillaribus trichotomis laxifloris longe pedunculatis pubescentibus, pedunculis pedicellisque gracilibus, bracteis minutis v. obsoletis, calycibus ovoideis inflatis 5-gonis rubrofuscis acute 5-fidis, corollæ albæ tubo gracili lobis æqualibus oblongo-ovatis obtusis, antheris longe exsertis.

C. trichotomum, *Thunb. Fl. Japon.* p. 256; *Schauer in DC. Prodr.* vol. xi. p. 668; *Kæmpf. Amæn.* p. 827, t. 22.

A native of Japan, of which I have seen specimens also from the Loochoo Island, Formosa, and China, at Amoy and Shanghai, though whether it is a native of the latter countries may be doubted. That it is indigenous in Japan can, I think, hardly admit of a question, for it seems to be found from Hakodadi to Yokohama, and it was described by Kæmpfer and Thunberg, the latter of whom states that the wood of the branches is inhabited by a larva which is used as a vermifuge for children.

Clerodendron trichotomum was introduced into this country some years ago, and has proved hitherto quite hardy, flowering copiously in September, when it has a very handsome appearance, but whether it has stood the unusual severity of this present winter remains to be seen; its foliage is early cut by autumnal frosts, and it has not fruited at Kew. In native specimens the corolla-tube is always exserted, sometimes twice as long as the calyx, and slightly curved, but in the Kew specimens it is not exserted for more than a quarter of an inch. The whole plant has

when bruised a peculiar heavy smell, which Thunberg likens to the poisonous odour of Mandragora.

Descr. A shrub six to ten feet high, sometimes a small tree; glabrous pubescent or almost tomentose; branches round, smooth, soft; rather stout. *Leaves* soft and flaccid, the lower very large and trifid, the upper broadly ovate or orbicular-ovate, rarely cordate, long-acuminate, triple-nerved at the base which is more or less suddenly contracted into the petiole, margins quite entire or obscurely undulate (I have not seen them in the native or cultivated state so serrate as they are in the plant cultivated at Kew); petiole one and a half to three inches long, slender, terete. *Cymes* numerous, axillary and terminal, long-peduncled, much trichotomously branched, suberect and drooping; branches spreading and pedicels very slender; bracts small, caducous. *Calyx* half an inch long, ellipsoid or ovoid, five-angled, acutely five-lobed above the middle, red-brown. *Corolla* white; tube more or less exserted, very slender, sometimes twice as long as the calyx, slightly curved; limb nearly one inch in diameter, segments nearly equal, elliptic, obtuse or subacute, horizontally spreading. *Stamens* with the filaments longer than the corolla; anthers oblong. *Style* very slender. *Fruit* four-lobed, included in the somewhat enlarged calyx.—*J. D. H.*

Fig. 1, flower cut open longitudinally; 2, anthers; 3, stigma; 4, section of ovary:—*all enlarged.*

M S del J N Fitch Lith

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Tab. 6562.

HYMENOCALLIS Harrisiana.

Native of Mexico.

Nat. Ord. Amaryllidaceæ.—Tribe Pancratieæ.

Genus Hymenocallis, *Herb.*; (*Kunth Enum.* vol. v. p. 664.)

Hymenocallis *Harrisiana*; bulbo parvo globoso tunicis brunneis membranaceis, foliis 3–5 synanthiis oblanceolatis subacutis glabris subpedalibus e medio ad basin sensim angustatis, scapo subancipiti subglauco foliis breviore, umbellis 2–3-floris, spathæ valvis lanceolatis, ovario oblongo-trigono sessili loculis biovulatis, perianthii tubo cylindrico 3–5-pollicari, limbi segmentis linearibus tubo brevioribus, coronæ parvæ infundibularis margine dentibus parvis interstamineis prædito, staminibus limbo brevioribus, antheris magnis linearibus luteis, stigmate capitato.

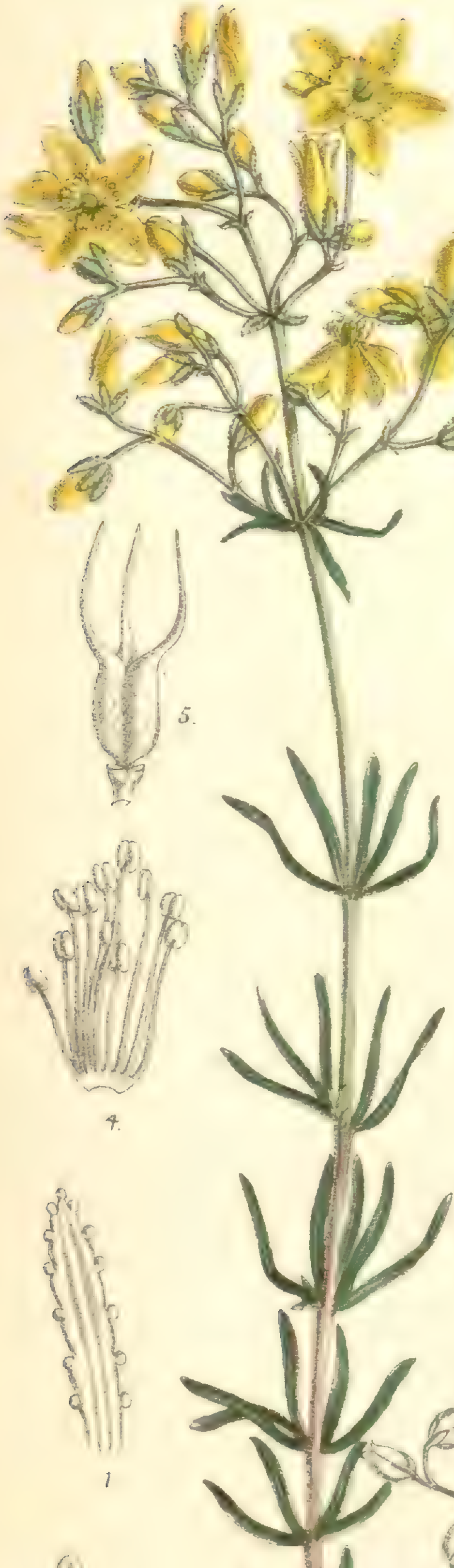
H. Harrisiana, *Herbert in Bot. Reg.* vol. xxvi. (1840), *Misc.* p. 35; *Kunth Enum.* vol. v. p. 672.

This is a very distinct species of *Hymenocallis*, remarkable for its dwarf habit, few-flowered umbels, and leaves not truly petioled, as in *H. speciosa* and *H. guianensis*, but narrowed gradually from the middle to the base. It was originally described by Dean Herbert from specimens imported from Mexico about the year 1840 by T. Harris, Esq., of Kingsbury, after whom it was named. It was never figured, and appears to have been soon lost from cultivation, but Herbert's description is so full and clear, that when we received specimens at Kew in the summer of 1879, almost simultaneously from Colonel Trevor Clarke and Mr. Elwes, there was no difficulty in identifying it. A plant which has been distributed under the garden name of *Hymenocallis uniflora* is clearly a mere form of the same species.

Descr. *Bulb* globose, an inch and a half in diameter, with brown membranous tunics. *Leaves* three to five from a bulb, contemporary with the flowers, oblanceolate, bright green, glabrous, subacute, a foot long, one and a half or two inches broad two-thirds of the way up, narrowed

gradually from the middle to the base. *Scape* eight or nine inches long, slightly ancipitous and slightly glaucous. *Flowers* usually two or three to an umbel, quite sessile, white, not distinctly fragrant; spathe-valves lanceolate, scariose. *Ovary* oblong-trigonous, half an inch long, with two ovules in each cell. *Perianth-tube* cylindrical, varying from three to five inches in length, greenish in the lower part, white upwards; segments of the perianth-limb linear, under three inches in length. *Corona* funnel-shape, from half to three-quarters of an inch long, and about the same in diameter at the throat, where it is furnished with a single small tooth between each of the filaments. *Stamens* about an inch shorter than the segments of the perianth-limb; anthers linear, versatile, bright yellow, half or three-quarters of an inch long. *Style* in our specimens not nearly reaching up to the anthers, but described by Herbert as overtopping them; stigma capitate.—*J. G. Baker.*

Fig. 1, a couple of stamens, *life size;* 2, stigma, *enlarged.*



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M.S. del. J.N. Fitch, Lith.

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TAB. 6563.

HYPERICUM CORIS.

Native of Mid. and S. Europe.

Nat. Ord. HYPERICINEÆ.—Tribe HYPERICEÆ.

Genus HYPERICUM, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 165.)

HYPERICUM (Coridia) *Coris*; glabrum, ramis e caule suffrutescente humili numerosissimis gracilibus simpliciusculis erectis v. ascendentibus teretibus, foliis sub-verticillatim fasciculatis linearibus obtusis marginibus revolutis, panicula terminali verticillatim ramosa, ramis apices versus floriferis, sepalis linearioblongis obtusis fructu erectis, marginibus glandulosis non imbricatis, petalis oblique ovato-oblongis obtusis eglandulosis, staminibus triadelphis, stylis 3, capsula septicida trivalvi.

H. Coris, *Linn. Sp. Pl.* n. 1107; *DC. Prodr.* vol. i. p. 553, *excl. citat. et Synon.*; *Reichb. Ic. Fl. Germ.* vol. vi. t. 351.

In a very early volume of the BOTANICAL MAGAZINE, published in 1792 (and in other works), a plant is figured (Tab. 178) under the name of *Hypericum Coris*, which has been rightly distinguished by Willdenow and all subsequent authorities as a different species from the Linnæan plant of that name, and called *H. empetrifolium*. This and the fact that the two plants are frequently confounded in gardens, both being now commonly cultivated, renders it very necessary that a good figure of the true *H. Coris* should appear in this Magazine, to a place in which work its beauty fully entitles it.

The differences between these plants consists in *H. empetrifolium* being a more shrubby, though not a bigger plant, with very short sepals which are spreading in fruit, and in having broader and less oblique petals. They have further, a very different geographical distribution, *H. Coris* being dispersed from the South of France to the Tyrol and occurring in many parts of Italy, whereas *H. empetrifolium* is confined to the Grecian Archipelago and neighbouring shores of Greece and Asia Minor. With regard to the fact that the Crimea is assigned to *H. empetrifolium* in this

Magazine (*H. Coris*, Tab. 178), it is unquestionably an error, as neither of the two species extends into the Russian dominions. The late Mr. Lee, who is the authority for this statement, probably received the seeds from some voyager who, on returning from the Crimea, had collected them in the Greek islands.

The true *H. Coris* was introduced into England as early as 1640, and is figured in Parkinson's Theatrum; for the specimen here figured I am indebted to G. C. Joad, Esq., F.L.S., of Wimbledon Park, the possessor of one of the richest and most accurately named collections of herbaceous plants in Britain.

Descr. *Stem* woody and rooting below, sending up very many erect or ascending cylindric subsimple glabrous slender branches six to eight inches high. *Leaves* about one inch long, in spreading subwhorled fascicles of four to six, spreading, narrowly linear, obtuse, with margins quite entire and revolute, sometimes to the midrib. *Inflorescence* terminal, of spreading whorled branches one to two inches long; bracts at the base of the branches linear, margins glandular. *Flowers* three to five towards the ends of the branches, three-quarters of an inch in diameter, golden-yellow, on short slender eglandular pedicels. *Sepals* one-sixth to one-quarter of an inch long, linear-oblong, obtuse, fringed with black glands, erect in fruit. *Petals* three times as long as the sepals, obliquely oblong, eglandular. *Stamens* in three fascicles. *Styles* three. *Capsule* three-celled. *Seeds* linear-oblong.—*J. D. H.*

Fig. 1. bract; 2, bud; 3, petal; 4, bundle of stamens; 5, pistil; 6, transverse section of ovary; 7, fruiting branch; 8, petal of *N. empetrifolium*; 9, bud of the same:—***all more or less enlarged.***

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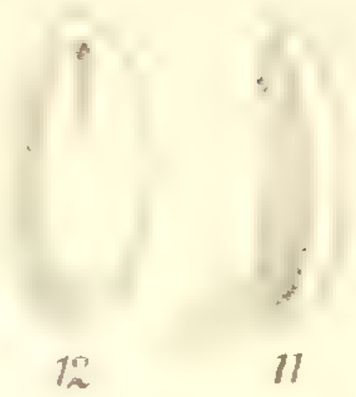

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Tab. 6564.

NARDOSTACHYS Jatamansi.

Native of the Himalaya.

Nat. Ord. Valerianeæ.

Genus Nardostachys, *DC.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 153.)

Nardostachys *Jatamansi;* subscapigera, glabra v. superne pubescens, foliis radicalibus elongatis elliptico- v. spathulato-lanceolatis acutis in petiolum brevem v. elongatum angustatis, scapis gracilibus simplicibus medio bifoliatis, cymis densifloris ad apicem scapi in paniculam 3-chotome ramosam dispositis, bracteis liberis, floribus pallide reseo-purpureis sessilibus, calycis pubescentis lobis ovatis basi connatis ciliatis, corollæ obliquæ tubo cylindraceo basi extus gibbo intus sericeo, lobis brevibus rotundatis, filamentis gracilibus ciliatis, antheris inclusis, fructu compresso 1-spermo calycis lobis auctis membranaceis reticulatis coronato.

N. Jatamansi, *DC. Mem. Valer.* p. 7, t. 1; *Prodr.* vol. iv. p. 624; *Royle Ill. Pl. Himal.* pp. 242, 244, t. 54; *Fr. Nees Ic. Plant. Med.* fasc. iii. t. 4; *Clarke in Fl. Brit. Ind.* vol. iii. p. 211.

N. grandiflora, *DC. Mem. Valer.* p. 8, t. 2; *Prodr.* vol. iv. p. 624; *Wall. Pl. As. Rar.* vol. iii. p. 40.

Patrinia Jatamansi, *Don Prodr. Fl. Nep.* p. 159.

Valeriana Jatamansi, *Wall. Cat.* 431, *not of Jones in As. Res.; Don in Lamb. Ill. Cinch.* p. 180, *cum ic.*

Nardus indica, *Bauh. Hist.* vol. iii. 2, p. 202.

Fedia grandiflora, *Wall. Cat.* n. 1187.

The interesting plant here figured is unquestionably one of the Spikenards of the ancients, the history and identification of which have been much complicated by the long prevalent opinion that the word Spikenard referred to but one vegetable substance, and by the fact that Sir William Jones in his learned essay on the present plant was misled into referring its root to the foliage, &c., of a very different plant, which proved to be a species of *Valeriana*.

Royle, who has summed up the history of the Spikenard of India with his usual care and learning, observes that Dioscorides described four kinds of Nard, the Syrian, the Indian (also called Gangites, from the river near which is the mountain which produces it), the Celtic, and the mountain Nard; and that a reference to the old Arabic and Persian works on the subject shows that the Spikenard or Narden is synonymous with Sumbul, of which four kinds are described, and that of these four the Sumbul-hindee is the Himalayan *Nardostachys*, being the Sumbul-ool-teeb, or fragrant Nard of the Arabs, the Narden of the

Greeks, the Nardoom of the Latins, the Balcher of the Hindoos, and the Jatamansi in Sanscrit.

Nardostachys Jatamansi abounds in the loftier regions of the whole Central and Eastern Himalaya, extending from Kumaon to Bhotan, at elevations of 11,000 to 17,000 feet, inhabiting stony places, and varying in stature and amount of odour according to the elevation, specimens from low levels attaining twenty-eight inches in height, with larger leaves and flowers and faintly-scented rhizomes, whilst the more Alpine forms are dwarf, more slender, smaller flowered, with very strongly-scented rhizomes. The odour of the plant is heavy, but not wholly disagreeable, and though, like similar semifœtid drugs, highly appreciated by Orientals, it could never find favour amongst the Western nations of Europe. The rhizomes are collected in abundance by the natives of the hills, and used throughout the East in a dried state in unguents and as a drug; no allusion, is, however, made to it in Drury's "Useful Plants of India."

The species here figured flowered in the Herbaceous Ground of the Royal Garden in September, 1878, for the first time in Europe, I believe.

Descr. *Root* fusiform, inclined, terminating upwards in a simple or forked ascending stock one to three inches long, densely clothed with the black fibrous remains of the old petioles. *Leaves* tufted, two to four inches long, rarely longer, elliptic-lanceolate or spathulate, acute, nerves obscure, narrowed into a long or short petiole. *Scape* four to ten inches high, with one pair of small sessile leaves about the middle. *Flowers* a quarter of an inch broad, in dense small heads, which are arranged in a trichotomously-branched terminal panicle. *Calyx* pubescent; lobes ovate, connate at the bases, acute, enlarged and reticulate in fruit. *Corolla* pale rose-purple, one-third of an inch long, cylindric, gibbous at the base and contracted into a very short narrow tube; lobes rounded, dorsal larger. *Filaments* hairy. *Style* filiform; stigma simple. *Fruit* compressed, one-seeded, three-celled.—*J. D. H.*

Fig. 1, Bract, calyx, and style; 2, corolla; 3, the same laid open; 4, stamen; 5, ovary laid open; 6, ovary cut transversely; 7, fruit; 8, empty cells of ditto; 9, section of fruit showing the seed; 10, 11, and 12, seed; 13, embryo; 14, transverse section of ditto:—*all enlarged.*

M.S. del, J.N. Fitch, Lith

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Tab. 6565.

Æchmea Lindeni.

Native of South Brazil.

Nat. Ord. Bromeliaceæ.—Tribe Billbergieæ.

Genus Æchmea, *Ruiz et Pavon;* (*Baker in Trimen Journ. Bot. N.S.* vol. viii. p. 129.)

Æchmea (Pothuava) *Lindeni;* acaulis, cæspitosa, foliis circiter 20 loratis rigidis erectis 2–3-pedalibus apice rotundatis minute cuspidatis facie viridibus canaliculatis dorso obscure lepidotis et lineatis margine aculeis minutis deltoideis ascendentibus armatis, pedunculo subpedali foliis pluribus parvis lanceolatis scariosis adpressis superioribus rubellis prædito, floribus multis in spicam densam oblongam simplicem aggregatis, bracteis membranaceis rubris inferioribus lanceolatis acutis calyce æquilongis, ovario oblongo luteo glabro, sepalis deltoideo-orbicularibus imbricatis distincte oblique cuspidatis, petalis lingulatis citrinis sepalis duplo longioribus basi appendiculatis, genitalibus inclusis.

Æ. (Pothuava) Lindeni, *Baker in Trimen Journ. N.S.* vol. viii. (1879) p. 233.

Hoplophytum Lindeni, *E. Morren. in Belg. Hort.* vol. xv. (1865) p. 164; vol. xxiii. (1873) p. 81, t. 5; *K. Koch in Wochenschrift*, vol. viii. (1865) p. 398.

Next to *Billbergia*, *Æchmea* may fairly be considered the most effective genus of Bromeliads for decorative purposes. Of late years our knowledge of it has rapidly increased, and several fine new species have been brought into cultivation. Taking the genus in a broad sense, so as to include *Hoplophytum*, *Echinostachys*, *Pothuava*, and *Canistrum*, as it is treated in my monograph in the Journal of Botany above cited, we know now not less than sixty species, so that next to *Tillandsia* it is the largest genus in the Natural Order. The present plant was distributed by Linden in 1865, and was received by him from M. Libon, who discovered it in the province of Santa Catherina in South Brazil. Our drawing was made from a plant presented to the Kew collection by Mr. J. T. Peacock, which flowered in the palm-stove in March, 1879. It is a near ally of the plant figured by Gaudichaud (Atlas Bonite, Tab. 117) under the name of *Pothuava spicata*, which I

take to be merely a variety of the widely-diffused *Æchmea nudicaulis* of Grisebach, the *Bromelia nudicaulis* of Linnæus.

Descr. *Tufts* sessile, crowded. *Leaves* about twenty in a rosette, lorate, rigid in texture, erect, two or three feet long, three inches broad at the dilated base, one and a half or two inches at the middle, rounded with a small cusp at the apex, green and glabrous on the channelled face, obscurely lepidote and lineate on the back, the edge bordered by minute ascending horny teeth. *Peduncle* about a foot long, with several small ascending lanceolate, adpressed scariose leaves, the upper tinted red. *Flowers* numerous, tightly packed in a dense simple oblong spike two or three inches long; bracts one to each flower, bright red, membranous in texture, the lower ones lanceolate acute, as long as the calyx, the upper ones shorter and obtuse, with a cusp. *Calyx* not more than half an inch long including the ovary, which is oblong, glabrous, and bright orange-yellow; sepals orbicular-deltoid, horny, imbricated, with a large oblique cusp. *Petals* lingulate, obtuse, lemon-yellow, twice as long as the sepals, scaled inside at the base. *Stamens* included; filaments and anthers both linear, lemon-yellow, the latter dorsifixed and erect. *Ovary* many in a cell, central, horizontal; style filiform; stigmas linear, spirally twisted.—*J. G. Baker.*

Fig. 1, the whole plant, *reduced;* 2, a sepal, *enlarged;* 3, a complete flower, with its bract, *natural size;* 4, a petal, with the stamen attached to it; 5, one of the basal scales of the petal; 6, two views of an anther; 7, stigmas; 8, horizontal section of ovary; 9, an ovule:—*all more or less enlarged.*

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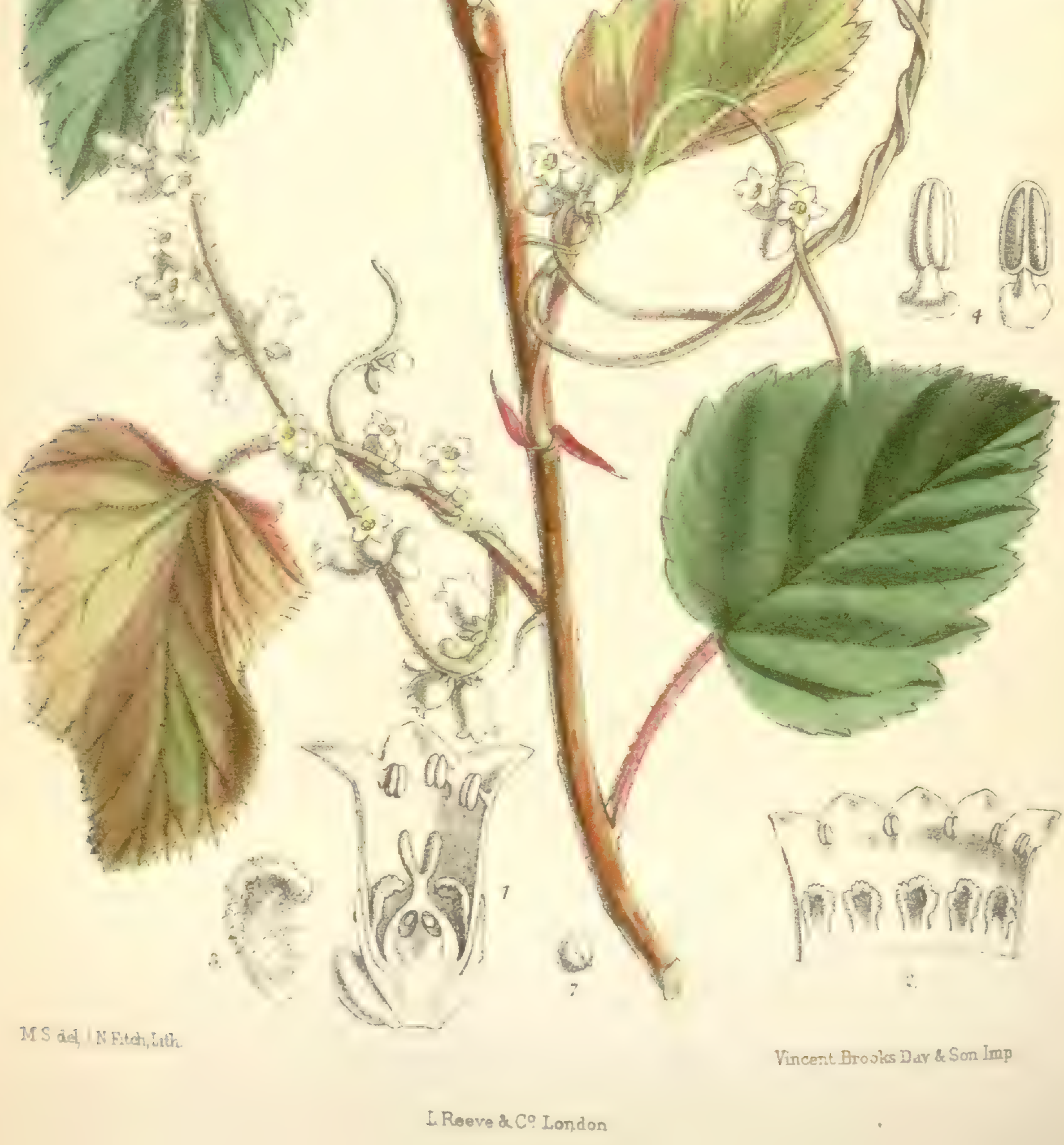

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M S del. | N Fitch, Lith.

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Tab. 6566.

CUSCUTA REFLEXA.

Native of India.

Nat. Ord. Convolvulaceæ.—Tribe Cuscuteæ.

Genus Cuscuta, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 881.)

Cuscuta (Callianche) *reflexa;* caule funiculari lævi v. verrucoso, floribus capitatis v. laxe racemosis, calycis tubo sæpe verrucoso brevi, lobis brevibus rotundatis, corollæ tubo cylindraceo calyce duplo longiore, lobis 5 brevibus patenti-reflexis, squamis ad basin fere corollæ insertis oblongis v. obovato-oblongis incurvis dense fimbriato-marginatis, staminibus ore corollæ insertis filamentis brevissimis antheris breviter oblongis, ovario ovoideo-globoso, stylo brevi, stigmatibus oblongo-clavatis, capsula circumscissa 4-sperma, septis tenuissimis, seminibus compressis.

C. reflexa, *Roxb. Cor. Plant.* t. 104; *Fl. Ind.* vol. i. p. 446; *Choisy in DC. Prodr.* vol. ix. p. 454; *Engelmann in Trans. Acad. Sc. St. Louis*, vol. i. p. 518.

C. reflexa *var.* verrucosa, *Hook. Exot. Fl.* t. 150.

C. grandiflora, *Wall. Cat.* n. 1318.

C. macrantha, *G. Don Gen. Syst.* vol. iv. p. 305; *DC. l. c.* 455.

C. megalantha, *Steud. Nomencl.*

C. elatior, *Choisy Monogr. Cuscut.*

C. verrucosa, *Sweet Brit. Fl. Gard.* t. 6.

Though seldom seen in cultivation, this curious plant was first introduced into England in 1823, when it was raised in Colvill's then celebrated Nursery, from seeds sent from the Calcutta Botanical Gardens, and figured in Sweet's British Flower Garden as *Cuscuta verrucosa*. In the following year it flowered in the Edinburgh Botanical Garden, from seeds sent from the Madras Presidency, and was figured and described in the Flora Exotica under its proper specific name. It is a very common Eastern Asiatic plant, occurring in China, Japan, and throughout the Peninsula and the Gangetic valley, in Ceylon and the whole length of the Himalayas, ascending to 9000 feet in Sikkim, attaching itself to a great many different plants, and varying much in the stoutness of the stem, the most

slender forms inhabiting the lower levels. On the banks of the river Soane in Bengal I have seen it clothing small trees with a beautiful web of golden cords studded with white sweet-scented flowers.

C. reflexa is very easily cultivated. Sweet points out that the more juicy the plant is to which it attaches itself, the stronger it grows, and says that the strong-growing species of Pelargonium suit it admirably. He adds that a plant raised in spring began flowering in September, and soon became entirely covered with flowers of a most delightful fragrance, somewhat resembling a mixture of cowslips and violets; and that a plant which had taken hold of the ivy by Mr. Colvill's shop soon covered a great part of it, where it continued in flower till the very severe frosts, and ripened its seeds.

I am indebted for the specimen figured here to Mr. Lynch, of the Cambridge Botanical Gardens, whose success has been identical with that of his predecessor sixty years ago. He finds it to flourish on Pelargoniums, and in contact with a bed of tree-ivies, it formed a mass twenty-three feet long and twelve broad, which was all killed by six degrees of frost.

Descr. *Stem* as thick as whipcord or less, whitish or yellow, smooth or warted. *Flowers* in clusters on short lax racemes, a quarter of an inch long, nearly white, very sweet-scented. *Calyx* short, hemispheric, lobes rounded. *Corolla* much longer than the calyx; tube cylindric; lobes broadly ovate, spreading and recurved. *Scales* near the base of the corolla-tube obovate-spathulate, incurved, tomentose and with a dense fringe of curled hairs. *Stamens* at the mouth of the corolla, filaments very short; anthers small, oblong. *Ovary* nearly globose; style very short; stigmas two, subcylindric. *Capsule* circimsciss.—*J. D. H.*

Fig. 1, flower cut through longitudinally; 2, corolla laid open; 3, scale; 4, stamen; 5, stigmas; 6, transverse section of ovary; 7, immature seed:—*all enlarged.*

M.S. del. J.N. Fitch, Lith

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Tab. 6567.

BOLBOPHYLLUM Beccarii.

Native of Borneo.

Nat. Ord. Orchideæ.—Tribe Dendrobieæ.

Genus Bolbophyllum, *Thouars*; (*Lindl. Gen. et Sp. Orchid.* p. 47.)

Bolbophyllum *Beccarii;* giganteum, rhizomate crassissimo repente alte scandente, pseudobulbis pro planta parvis obovoideo-globosis, foliis pseudobulbo solitariis maximis ovato-orbiculatis obtusis v. subacutis basi contractis et cum pseudobulbo articulatis crasse coriaceis pallide viridibus, pedunculo a basi pseudobulbi brevi crasso decurvo vaginis late triangulari-ovatis acutis inflatis imbricatis purpureo vittatis vestito, racemo ovoideo-cordiformi dependente incurvo densissime multifloro fetidissimo, bracteis lanceolatis acuminatis rubro striatis flores æquantibus, floribus pro planta parvis, ovario gracili, perianthio ringente, sepalis ovatis subacutis revolutis purpureo reticulatis, petalis lanceolatis acuminatis pallide lilacinis vitta media purpurea, labello breviter stipitato ovato-lanceolato obtuso recurvo disco 3-costato, columna obtusa antice utrinque minute 2-aristata.

B. Beccarii, *Rchb. f. in Gard. Chron.* 1879, vol. i. p. 41; 1880, vol. ii. p. 326, 525.

This is in many respects one of the most gigantic of Orchids; I know of none with so stout a rhizome, so large a leaf, or such massive inflorescence. On the other hand, specimens of various species of *Vanilla* are far more bulky; and I have been credibly informed of a single plant of *Vanda teres* in Birma being a sufficient load for an elephant! In one character *B. Beccarii* transcends all other Orchids, if not all other vegetables, and that is in the fœtor of its flowers, which is loathsome beyond description; of the same nature as that of *Amorphophallus* and of other Aroids (that of putrid fish), but more widely diffused, penetrating, and enduring. Although the drawing here given was executed in an airy room, close to a large open window, the artist was repeatedly overpowered by it, and finally made for a time really ill.

This most singular plant was discovered, in 1853, by Thomas Lobb, when collecting for Messrs. Veitch, in the

Island of Borneo, and leaves collected by him are preserved in the Lindley Herbarium of Orchids, now at Kew; but it was the celebrated traveller and botanist, Odoardo Beccari, who first obtained flowering specimens, which led to the determination of its genus, and to its being described by Reichenbach. It is singular that the Malayan Islands should present three of the largest flowered and most fœtid plants in the world—this, the *Rafflaria* of Sumatra, and the wonderful *Amorphophallus Titanum*, discovered in this last-named island by M. Beccari.

The specimen here figured was kindly communicated, in August of last year, by Messrs. E. G. Henderson and Sons, who were the first to flower it in Europe.

Descr. *Rhizome* as thick as the thumb, winding round the trunks of trees, to which it adheres by numerous root-fibres from its under surface, smooth, cylindric, green. *Pseudobulbs* rather distant, sessile, two inches in diameter and upwards, nearly globose, but contracted at the base, smooth, green. *Leaves* solitary and jointed on the pseudobulbs, one to two feet long, by three-quarters to one and a half broad, recurved, subacute, abruptly narrowed at the concave base, thickly coriaceous; nerves many, parallel. *Peduncle* from the base of the pseudobulb, short, decurved, thickly clothed with imbricating broadly ovate acute inflated sheaths of a dull purple colour streaked with red. *Raceme* six inches long and upwards, by three to three and a half in diameter, pendulous, elongate ovoid with an obtuse incurved tip, most dense-flowered and fœtid; bracts about equalling the flowers, lanceolate, acuminate, pale lilac striped with red. *Flowers* one-third of an inch in diameter. *Ovary* slender. *Sepals* ovate-oblong, revolute, ochreous, with red reticulations. *Petals* lanceolate, acuminate, dull ochreous with a central red band. *Lip* shortly stipitate, ovate-lanceolate, obtuse, recurved, yellow with red ribs on the disk. *Column* short, obtuse, with two short teeth in front at the tip.—*J. D. H.*

Fig. 1, Flower seen in front; 2, the same in profile; 3, column and lip; 4, lip; 5, column; 6, pollen:—*all enlarged.*

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Tab. 6568.

GEUM ELATUM.

Native of the Himalaya Mountains.

Nat. Ord. Rosaceæ.—Tribe Potentilleæ.

Genus Geum, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 619.)

Geum (Sieversia) *elatum*; herba sparse patentim pilosa, foliis radicalibus breviter petiolatis angustis a basi ad apicem rotundatam sensim dilatatis interrupte pinnatisectis, segmentis sessilibus rotundatis oblongo-rotundatisve crenatim sectis alternis 1–3 minoribus interdum minutis terminalibus confluentibus, foliis caulinis minoribus basi late stipulatis stipulis adnatis varie sectis, caule gracile parce ramoso, floribus longe pedunculatis erectis flavis, calycis lobis ovato-lanceolatis v. deltoideis integerrimis v. dentatis, petalis orbicularibus apice rotundatis v. emarginato-2-lobis, acheniis sericeo-villosis, stylo elongato glabro recto v. apicem versus curvo.

G. elatum, *Wall. Cat.* n. 711; *Hook. f. Fl. Brit. Ind.* vol. ii. p. 343.

Sieversia elata, *Royle Ill. Him. Pl.* p. 207, t. 39.

This belongs to a small section of *Geum*, separated from it by Willdenow as the genus *Sieversia*, the species of which differ from their congeners in the style, which elongates as the achene ripens, but does not become suddenly bent or twisted above the middle; as, however, all its other characters are those of *Geum*, which the species altogether resemble in habit, I have reduced *Sieversia* to a section of that genus. It includes about a dozen species, natives of mountainous districts in Europe, northern Asia, and N. America, where one, *S. Rossii*, is a native of high arctic regions. Two are figured in this work—*G. triflorum* (Tab. 2858) and *G. Peckii* (Tab. 2863), both North American plants. *Geum elatum* inhabits the whole length of the Himalaya. In its typical form, as figured here, it ranges from Kashmir to Kumaon, at elevations of 9000 to 12,000 feet; further eastwards, in Nipal and Sikkim, it is replaced by a subalpine form, var. *humile*, Royle (*Geum adnatum*, Wall.), a small plant, with usually a one-flowered scape, which inhabits elevations of 12,000 to 15,000 feet.

July 1st, 1881.

The specimen figured was raised from seeds sent by Mr. Ellis, of the Forest Department of India, and flowered in the Royal Gardens in the open border in July, 1880.

Descr. Whole plant laxly hairy, one to two feet high. *Rootstock* woody, cylindric, inclined. *Radical leaves* six to twelve inches long by one and a half to two and a half broad, subsessile, narrow, gradually dilated from the base to the rounded tip, pinnatisect; segments very many and unequal, the larger pairs having one to three pairs of very unequal smaller ones between them; large segments orbicular-oblong, deeply irregularly crenate, base rounded or cordate, the uppermost confluent and more oblong. *Stem* very slender, twice or more forked, rarely simple; cauline leaves small, with larger adnate cut stipules. *Flowers* erect, one and a half inch in diameter and under; peduncle long, slender, naked or with one or two erect laciniate bracts. *Calyx-lobes* ovate-deltoid or lanceolate, entire or toothed; bracteoles lanceolate. *Petals* orbicular, sometimes notched or two-lobed, golden-yellow. *Stamens* very short, glabrous. *Ovaries* numerous, villous; styles short, straight, elongating in fruit. *Achenes* narrowly ellipsoid, acute at both ends, compressed, villous; style filiform, glabrous, straight or curved towards the tip.—*J. D. H.*

Fig. 1, Stamens; 2, ovaries:—*both enlarged.*

M.S. del. J.N. Fitch Lith.

Vincent Brooks Day & Son Imp.

L. Reeve & Co. London

TAB. 6569.

KNIPHOFIA COMOSA.

Native of Abyssinia.

Nat. Ord. LILIACEÆ.—Tribe HEMEROCALLIDEÆ.

Genus KNIPHOFIA, *Moench.*; (*Baker in Journ. Linn. Soc.* vol. xi. p. 360.)

KNIPHOFIA *comosa*; rhizomate brevi crasso, fibris radicalibus copiosis cylindricis, foliis linearibus subtriquetris viridibus acuminatis, floribus cernuis in racemum densum oblongum aggregatis, pedicellis brevissimis, bracteis lanceolatis pedicello 3–4-plo superantibus, perianthii lutei infundibularis semipollicaris tubo supra ovarium constricto segmentis deltoideis, genitalibus perianthio subduplo longioribus, racemo fructifero elongato cylindrico pedicellis ascendentibus, fructu orbiculari.

K. comosa, *Hochst. in Flora*, 1844, p. 31; *Baker in Trimen Journ.* 1874, p. 4.

The genus *Kniphofia* is interesting geographically because like *Gladiolus*, *Aloe*, *Philippia*, *Aristea*, *Geissorhiza*, *Moræa*, and many others, it has its head-quarters at the Cape, and is represented in Abyssinia and other mountainous regions of Tropical Africa by outlying representatives. Two of the Abyssinian species have lately been brought into cultivation,—the present plant and *K. Quartiniana*, A. Rich., which was figured lately in Regel's Gartenflora (Tab. 907). *K. comosa* is much dwarfer.in habit than the well-known *K. Uvaria* of the Cape, with narrower leaves and smaller flowers, with the stamens and style very much exserted from the perianth. Of the smaller Cape species it approaches closely *K. pumila*, Kunth, a figure of which, under the name *Tritoma pumila*, will be found at Tab. 764 of the BOTANICAL MAGAZINE. Our drawing was made from a specimen sent by Mr. Elwes, with whom it flowered at Cirencester last September.

DESCR. *Rootstock* thick and short, sending out copious long fleshy root-fibres. *Leaves* in a dense rosette, linear, erect, bright green, weak in texture, very acuminate, almost triquetrous, half or three-quarters of an inch broad low

down, one and a half or two feet long in the wild specimens, but growing to twice that length in cultivation, finely veined, smooth or obscurely scabrous on the narrowly cartilaginous margins. *Scape* stout, terete, as long as or longer than the leaves. *Flowers* all drooping, aggregated in a dense oblong raceme; pedicels very short; bracts lanceolate, membranous, under half an inch long. *Perianth* bright yellow, infundibuliform, half an inch long, the tube constricted above the base; segments deltoid. *Stamens* and style bright red, about twice as long as the perianth; anthers minute, oblong, yellow. *Fruit-raceme* cylindrical, half a foot long, with its pedicels ascending. *Capsule* globose, about the size of a pea, dehiscing loculicidally, with numerous small black triquetrous seeds in each cell.—*J. G. Baker.*

Fig. 1, A flower complete; 2, anthers; 3, pistil; 4, horizontal section of ovary:—*all more or less enlarged.* Fig. 5, portion of fruiting-raceme:—*life size.*

M & N Hanhart lith

Vincent Brooks Day & Son Lith

L Reeve & Co London

Tab. 6570.

CRINUM Balfourii.

Native of the Island of Socotra.

Nat. Ord. Amaryllidaceæ.—Tribe Amaryllideæ.

Genus Crinum, *Linn.*; (*Kunth Enum.* vol. v. p. 547.)

Crinum (Platyaster) *Balfourii*; bulbo ovoideo brevicollo, foliis 10–12 synanthiis loratis firmulis viridibus vix pedalibus apice deltoideis, scapo compresso foliis subduplo longiori, umbellis 10–12-floris, spathæ valvis lanceolato-deltoideis, pedicellis crassis brevissimis, perianthii tubo recto viridulo bipollicari, limbi segmentis lanceolatis albis tubo æquilongis, filamentis segmentis distincte brevioribus, antheris parvis lineari-oblongis.

This is a well-marked new species of *Crinum*, discovered by Dr. Isaac B. Balfour in his recent exploration of the Island of Socotra. Its nearest alliance is with two Himalayan species, *C. amœnum* and *longifolium* of Roxburgh; but all the three subgenera of Crinum, *Stenaster*, *Platyaster*, and *Codonocrinum*, are represented in each of the three tropical continents, and also in Australia. Our drawing was made from a plant that flowered at Kew last autumn. The flowers are pure white and very fragrant, and the bulb and leaves are much smaller than those of the ordinarily cultivated kinds; so that it will be a decided acquisition from a horticultural point of view, and it is to be hoped, as Dr. Balfour secured a good supply of bulbs, that it will be permanently established as a memorial in our conservatories of his adventurous and successful expedition, in which about a hundred new species and twenty new genera of plants were discovered.

Descr. *Bulb* ovoid, about three inches in diameter, with a short neck. *Leaves* about a dozen in a rosette, contemporary with the flowers, lorate, spreading, bright green, firm in texture, closely veined, under a foot long, one and a half or two inches broad, with a deltoid tip, and a narrow

cartilaginous denticulate edge. *Scape* springing from the top of the bulb below the rosette of the leaves, compressed, one and a half or two feet long. *Flowers* very fragrant, ten or twelve in an umbel; spathe-valves pale, lanceolate-deltoid; pedicels stout, very short, each subtended by a long filiform white bract; ovary oblong, about half an inch long; perianth-tube cylindrical, greenish, permanently erect, two inches long; segments of the limb lanceolate, pure white, as long as the tube, spreading horizontally, half an inch broad. *Filaments* erecto-patent, two-thirds as long as the perianth-segments; anthers linear-oblong, small for the genus. *Style* reaching up to the summit of the stamens, tinged with red.—*J. G. Baker.*

TAB. 6571.

HOMALONEMA WALLISII.

Native of New Grenada.

Nat. Ord. AROIDEÆ.—Tribe PHILODENDREÆ.

Genus HOMALONEMA, *Schott.*; (*Engl. in A. DC. Monog. Phaneroj.* vol. ii. p. 332.)

HOMALONEMA *Wallisii*; acaulis, foliis ovatis v. ovato-oblongis breviter acuminatis glabris supra viridibus pallide maculatis subtus glaucis, petiolo brevi antice canaliculato vagina elongata, pedunculo brevi, spathæ sordide puniceæ albo punctulatæ tubo ventricoso lamina ovata acuminata cymbiformi latiore et paullo longiore, spadice spatha paullo breviore parte fœmineo quam masculo multo breviore et paullo crassiore, ovario 2–3-loculari.

H. Wallisii, *Regel in Gartenfl.* 1875, p. 33; 1876, p. 320; *Engler in A. DC. Monog. Phanerog.* vol. ii. p. 342.

CURMERIA Wallisii, *Masters in Gard. Chron.* 1877, p. 108, f. 16; *Rafarin in Rev. Hortic.* 1878, p. 192, f. 36; *André in Ill. Hortic.* vol. xxv. p. 24, t. 303.

I have followed Dr. Engler, the author of the excellent Monograph of *Araceæ* (in Alph. De Candolle's continuation of the Prodromus), in referring the genus *Curmeria* to a section of *Homalonema*, though the species are all American, whilst the Homalonemas proper are exclusively Asiatic, relying on his statement that there are no constant differences between them; feeling incompetent, without as thorough an examination of all the species as he has made, to pronounce an opinion of my own on the subject. It is, however, remarkable how few genera of the Order are common to the old and new worlds, the chief others being *Spathiphyllum* and *Arisæma*, of which the first is tropical, and the last temperate. M. André, indeed, says in the "Illustration Horticole" (l. c.), that an examination of the original species (*C. Roezlii*), and of two others, confirms his opinion that the genera are different, and adds that Dr. Masters is of the same opinion. But M. André does not give the grounds of his opinion, and in referring to Dr. Masters' account of *C. Roezlii* (Gard. Chron. 1874,

p. 804), and of *C. Wallisii* (1877, p. 108), I do not find that he anywhere expressed an opinion as to the validity of the genus; he simply rightly refers these plants to André's genus *Curmeria*, and is no more responsible for the soundness of the latter, as distinct from *Homalonema*, than I am for Engler's view of both these being sections of one genus.

H. Wallisii was discovered by the collector whose name it bears in the Andes of Columbia, when travelling for Mr. Bull, to whom the Royal Gardens are indebted for the specimen of the plant from which our figure is taken, and which flowered at Kew in October, 1878. Mr. Brown informs me that there are two forms of the species, that here figured and one with narrower leaves that have very indistinct cartilaginous margins.

Descr. *Rootstock* subterranean, stout, aromatic; stem 0. *Leaves* numerous, spreading, thickly coriaceous, four to six inches long, oblong or oblong-ovate, shortly acuminate, quite glabrous, base rounded or narrowed, dark green above with very pale blotches, glaucous beneath; petiole very short, grooved in front, sheathing part one to two inches long, membranous, red. *Peduncle* one to one and a half inch long, stout, and as well as the leaf-sheaths and spathes of a dirty red-purple colour speckled with white. *Spathe* three inches long, tube or convolute portion obliquely turgid, one and a half inch long by one in diameter; limb rather shorter and narrower, erect, acuminate, boat-shaped. *Spadix* almost as long as the spathe, rather slender, cylindric, obtuse; female portion a half to three-quarters of an inch long, densely clothed with minute densely-packed flowers, male portion three times as long, narrower, pale yellow. *Stamens* three, very short, cells globose, connective trigonous tumid. *Ovary* obovoid, compressed, two- to three-celled, stigma sessile discoid; ovules numerous, inserted on placentas projecting from the septum, anatropous or semi-anatropous.—*J. D. H.*

Fig. 1, Spadix; 2, stamens seen from above; 3, a single stamen seen in front; 4, ovary; 5, transverse section of ditto; 6, ovules:—*all enlarged.*

Brooks Day & Son Lith.

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Tab. 6572.

SYNECHANTHUS FIBROSUS.

Native of Guatemala.

Nat. Ord. Palmeæ.—Tribe Chamædoreæ.

Genus Synechanthus, *H. Wendl. in Bot. Zeit.* vol. xvi. p. 145.

Synechanthus *fibrosus;* palma gracilis, inermis, caudice arundinaceo annulato, foliis pari-pinnatis, foliolis multijugis hic illic interruptis lineari-lanceolatis acuminatis medio costatis 5–7-nerviis basi lata insertis, marginibus basi recurvis, vaginis brevibus, spadicibus interfoliaceis longe pedunculatis 2-3-plicato ramosis erectis fructiferis pendulis, ramis strictis gracillimis compressis, spathis pluribus tubulosis membranaceis persistentibus, floribus minutis in acervulos elongatos distichos ramulos spadicis alternatim marginantes dispositis, inferiore in acervulo ♀ ceteris ♂, sepalis transverse oblongis, petalis ♂ ovatis valvatis, ♀ orbicularibus imbricatis, staminibus 6, ovario globoso 3-loculari, stigmatibus 3 sessilibus, **bacca ellipsoidea 1-sperma.**

S. fibrosus, *Wendl. l. c.*

Rathea fibrosa, *Karst. in Wochenschr.* vol. i. p. 377, vol. ii. p. 15.

A graceful tropical Palm, one of a genus of three known species, two of them natives of that part of the American continent which, extending from Mexico to Panama, is commonly known as Central America, and which includes Yucatan, Guatemala, Belise, Honduras, Nicaragua, and Costa Rica; the third Colombian. These countries are all rich in Palms, for a knowledge of which we are mainly indebted to Herman Wendland and Œrsted, the enterprising botanical explorers of those unhealthy regions.

Synechanthus is remarkable for the arrangement of the flowers, which form linear groups of eight or ten, placed alternately on the opposite edges of the compressed branches of the spadix, the lower flower alone in each group being female, the rest male. In this respect *Synechanthus* a good deal resembles the Mauritian genus *Hyophorbe*, which differs very materially in its infra-foliaceous spadix, in the presence of staminodia, in the one-celled, one-ovuled ovary, and the

pendulous ovule. From *Chamædorea*, *Synechanthus* differs by its monœcious flowers, and their arrangement on the spadix.

S. fibrosus is an exceedingly graceful Palm, with a trunk in the Kew specimen about four feet high, and a crown of leaves as long, from amongst the bases of which the graceful spadices spring, laden with almost microscopic flowers. These are succeeded by the bright orange-red fruits, which weigh down the spadix, and are copiously produced. The Royal Gardens are indebted to Dr. Wendland, Director of the Royal Gardens at Herrenhausen, Hanover, for the specimen here figured.

Descr. *Trunk* four feet high, solitary, erect, slender, ringed, green. *Leaves* as long, erect and spreading, pinnate, sometimes interruptedly; leaflets numerous, one to one and a half feet long, spreading and rather pendulous, linear-lanceolate from a broad adnate base, bright green, five to seven-nerved, the costa prominent, quite glabrous, margins recurved towards the base; rachis subterete with a mesial ridge above; petiole rounded; sheaths short, open. *Spadices* numerous, from amongst the leaves, suberect, one-third as long as the leaves; peduncle long, slender; branches many, strict, forked, very slender. *Spathes* several, tubular, membranous, persistent. *Flowers* in two-ranked short linear clusters of eight to ten placed alternately on opposite sides of the branches, minute, green, sessile, the lowest of each cluster female, the rest males; bracts and bracteoles none. *Calyx* of three very short transversely elongate sepals. *Petals* of the male ovate, valvate; of the female orbicular, imbricate. *Stamens* six, attached to the base of the petals. Ovary globose, three-celled, with an erect ovule in each cell; stigmas three, sessile, minute. *Fruit* an ellipsoid orange-red sessile drupe, one to one and a quarter inch long; pericarp fleshy and fibrous. *Seed* free, erect, ellipsoid, smooth, raphe with faint branches; *albumen* equable; embryo near the top of the seed.—*J. D. H.*

Fig. 1, Portion of spadix with group of flowers; 2, young male flower; 3. petal and stamens; 4, female flower; 5, transverse section of ovary; 6, seed; 7, vertical section of the same showing embryo:—*all enlarged*.

M.S. del. J.N. Fitch Lith.

Vincent Brooks Day & Son Lith.

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Tab. 6573.

BERBERIS sinensis.

Native of Northern China.

Nat. Ord. Berberideæ.—Tribe Berbereæ.

Genus Berberis, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 43.)

Berberis *sinensis*; frutex erectus a basi ramosissimus, ramulis pendulis elongatis flagelliformibus, spinis 2–3-nisve, foliis fasciculatis coriaceis oblanceolatis spathulatisve acutis apiculatis v. obtusis integerrimis v. inferioribus parce spinuloso-dentatis, racemis longe pedunculatis multifloris pendulis, floribus parvis longe pedicellatis, sepalis 3 exterioribus minutis, baccis elongato-ellipsoideis utrinque obtusis rubris 1–2 spermis, stigmate parvo sessili.

B. sinensis, *Desf. Cat. Hort. Par. Ed.* 1804, p. 150; *DC. Syst. Pl.* vol. ii. p. 8; *Prodr.* vol. i. p. 106; *Duhamel Arb. Ed. Michel.* vol. iv. p. 13; *Loudon, Arboretum*, vol. i. p. 304.

B. Chinensis, *Poiret, Dict.* vol. viii. p. 617.

This is the most graceful of all the numerous species of Barbery cultivated at Kew, the branchlets from the base to the crown of the plants weeping and being loaded with blossoms in the spring. The flowers are, however, the smallest of the genus known to me, and the berries are smaller than those of *B. vulgaris*. I have examined native specimens collected in North China by Bunge, Père David, and Mr. John Ross, which display an amount of variation only too common in all species of the genus; some of the specimens having erect branches and pendulous racemes, and others shortly pedicellate flowers; but all agree in the very small flowers and in the general shape of the foliage. A Caucasian plant received from the Herbarium of the Imperial Botanic Garden of St. Petersburg, and bearing this name, resembles it entirely in foliage, but the flowers are more umbellate towards the end of the raceme. In young plants the leaves are deeply regularly spinulose-serrate.

Berberis sinenis has been long cultivated in the Arboretum

of Kew, but was not so at the period of the publication of the second edition of the "Hortus Kewensis" (1811), where only four species are enumerated as existing in the Royal Gardens. Loudon, however, states that it was found during Lord Macartney's embassy to China, and introduced into England in 1800.

Descr. A much-branched glabrous bush four to six feet high, branches sub-erect; branchlets long, slender, pendulous; spines in pairs or threes. *Leaves* fascicled on the branches, one to two inches long, very variable in size and shape in each fascicle, coriaceous, green, not glaucous, from linear-obovate to spathulate, obtuse acute or apiculate, quite entire or rarely sparingly spinulose-toothed (strongly so in the young plant); nerves faint. *Flowers* in very slender long-peduncled pendulous many-flowered racemes two to three inches long; each on a slender pedicel of one-fourth to half an inch long, with a minute deciduous bract at its base. *Perianth* globose, very small, under one-fourth of an inch in diameter, pale yellow. *Outer sepals* minute, orbicular; next series cymbiform. *Petals* smaller, inner series rather truncate. *Berries* one-third to half an inch long, narrowly ellipsoid, rounded at the base and tip, bright red, one to two-seeded; stigma small, quite sessile.—*J. D. H.*

Fig. 1, Vertical section of flower; 2, stamens :—*both enlarged.*

A. Sprengel del. J.N. Fitch Lith.

Vincent Brooks Day & Son Lith.

Tab. 6574.

CLEMATIS RETICULATA.

Native of the Southern United States.

Nat. Ord. Ranunculaceæ.—Tribe Clematideæ.

Genus Clematis, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 3.)

Clematis *reticulata*; caule gracile scandente ramoso glabro, ramulis gracillimis sericeo-pubescentibus v. glabratis, foliis coriaceis gracile petiolatis superioribus integris ellipticis v. elliptico-lanceolatis integerrimis, inferioribus pinnatis 7–9-foliolatis, foliolis multiformibus integris v. irregulariter paucilobatis obtusis, basi sæpissime cuneatis, nervis nervulisque utrinque prominentibus creberrime reticulatis, floribus solitariis longe pedunculatis, perianthio ovoideo sericeo, sepalis ovato-lanceolatis erectis apicibus acutis recurvis crasse coriaceis sulcatis marginibus incrassatis non vittatis, acheniorum caudis elongatis plumosis persistentibus.

C. reticulata, *Walt. Flor. Carolin.* p. 156; *Michx. Fl. Bor. Am.* vol. i. p. 318; *DC. Syst.* vol. i. p. 157; *Prodr.* vol. i. p. 7; *Torr. and Gr. Fl. N. Am.* vol. i. pp. 10, 658; *Lindl. in Bot. Reg.* sub. tab. 60; *Engelm. and Gray, Plant Lindh.* p. 3; *Chapm. Fl. S. U. States*, p. 4; *S. Wats. Bibl. Ind. N. Am Bot.* p. 11.

Dr. Lindley, writing in 1846, remarks under *Clematis crispa*, "The plants cultivated in our Gardens under the names of *Clematis viorna*, *crispa*, *reticulata*, *cylindrica*, *rosea*, &c., present a scene of confusion such as is rare among Botanical compilations;" and he proceeds to devote four pages to unravelling the synonymy and defining the characters of the first four of these species. Not successfully, however, for he refers the *C. crispa* of this work (Tab. 1892) to the present plant, though the excellent figure there given differs not in any particular from that of his own *C. crispa*, and differs wholly from *C. reticulata*, both in the foliage and in having very broad undulate margins of the sepals.

Clematis reticulata ranges in the Southern United States east of the Mississippi, from South Carolina to Florida. The specimen here figured is from a plant grown at Kew in the open border, received from Messrs. Rodger McLelland

and Co., under the name of *C. Fremonti*, a very different species, with very large leaves and no tails to the achenes. The flowers which appear in September are much paler than as described in native specimens. The plant was nearly killed by last winters' cold, and is only now beginning to grow again.

Descr. A rambling climber, with very slender much-branched glabrous stems, and pubescent branchlets. *Leaves* leathery and very closely reticulate with prominent nerves on both surfaces, upper simple, elliptic, obtuse or apiculate, lower pinnate with seven to nine leaflets which are most variable in size and in shape, from oblong or lanceolate to rounded, and in being entire or lobed. *Flowers* solitary, pendulous on the ends of long slender naked pubescent peduncles. *Perianth* ovoid, an inch long, dull greenish and purplish. *Sepals* lanceolate, pubescent, connivent except at the recurved tips, thickly coriaceous and grooved, the margins not thinning out into a waved border. *Filaments* and slender *anthers* silky. *Achenes* with long silky tails.—*J. D. H.*

Fig. 1, Vertical section of flower; 2, stamens; 3, carpel:—*all enlarged.*

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Tab. 6575.

OSBECKIA rostrata.

Native of Bengal.

Nat. Ord. Melastomaceæ.—Tribe Osbeckieæ.

Genus Osbeckia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 741.

Osbeckia (Ceramicalyx) *rostrata*; glabra pilosa v. hispida, caule erecto subramoso stricto tetragono v. basi tetraptero, foliis oppositis v. 3-natim verticillatis sessilibus v. breviter petiolatis elliptico-lanceolatis acutis 3–7-costatis glabris v. utrinque pilosis, costis strigosis, corymbis terminalibus, ramis sæpius elongatis, floribus amplis 4-meris breviter pedicellatis, bracteis ovatis, floribus 4-meris, calycis tubo elongato-urceolato basi inflato glabro v. stellatim piloso, limbi lobis ovatis acutis, corolla ampla, petalis late obovato-orbiculatis purpureis, antheris elongatis longe rostratis, calyce fructifero longe tubuloso glabro stellatim-piloso v. longissime crinito.

O. rostrata, *Don Prodr. Fl. Nep.* p. 221; *DC. Prodr.* vol. iii. p. 143; *Triana in Trans. Linn. Soc.* vol. xxviii. p. 53; *Kurz in Journ. As. Soc. Beng.* 1877, part ii. p. 74; *Clarke in Fl. Brit. Ind.* vol. ii. p. 517.

O. ternifolia, *Don l. c.* p. 221; *DC. l. c.* p. 142; *Wall. Cat.* no. 4058.

O. pulchella, *Wall. Cat.* no. 4059; *Naud. in Ann. Sc. Nat.* ser. 3, vol. xiv. p. 73.

O. campestris, *Wall. Cat.* no. 4063.

O. longicollis, *Wall. Cat.* no. 4065.

Melastoma pulchella, *Roxb. Fl. Ind.* vol. ii. p. 403.

Melastomacea, *Griffith Ic. Pl. Asiat.* t. 638.

It is singular that so handsome a plant as this, and so common a one over a large tract in India, should never before have been figured in any Horticultural work, the only published representative being the coarse sketch in Griffiths' posthumous "Scones," published in Bengal. It is a native of swampy districts along the foot of the Himalaya and in Northern Bengal, from Nipal eastward to Assam, Rangoon, and Burma. These were supposed to be the limits of its range up to the period of the publication of the order *Melastomaceæ* in the Flora of British India, in 1879, since which time, however, a perfectly glabrous form of it has been found by Col. Beddome in the Sirumallay hills of

the Deccan, at an elevation of 3500 feet. As a rule it affects very wet places, and especially rice-swamps, &c., but it sometimes may be found in moist places in the hills.

Osbeckia rostrata was introduced into Kew about twenty-five years ago, and flowered first in 1857, but the plant has been lost, and I am indebted to Messrs. E. G. Henderson, of Pine Apple Place, for the fine specimen here figured, which flowered in October, 1880. It requires stove treatment.

Descr. A rather slender sparingly-branched herbaceous shrub two to four feet high, glabrous, hairy, or hispid. *Stem* soft, strict, sometimes as thick as the finger at the base and four-winged, four-angled above, side-branches if any usually long and slender. *Leaves* three to ten inches long, opposite and three-nately whorled, subsessile or with short thick petioles, elliptic-oblong -ovate or -lanceolate, acuminate, quite entire or crenulate; transverse nerves distinct. *Flowers* two to two and a half inches in diameter, four-merous, in loose terminal corymbs with four-angled peduncles and pedicels; bracts ovate, caducous. *Calyx* half to nearly an inch long; tube with an inflated base, glabrous or stellately pubescent; limb with four ovate acute segments. *Petals* nearly orbicular, with a waved margin. *Anthers* subequal, with long curved beaks. *Ovary* with a glabrous or hispid crown. *Fruiting calyx* glabrous, or clothed sometimes densely with very long stellate hairs, giving it a shaggy appearance.—*J. D. H.*

Fig. 1, Stamens; 2, base of calyx and lip of ovary; 3, transverse section of ovary:—*all magnified.*

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Tab. 6576.

SCHISMATOGLOTTIS crispata.

Native of Borneo.

Nat. Ord. Aroideæ.—Tribe Philodendreæ.

Genus Schismatoglottis, *Zoll. and Morr.*; (*Engler Monog. Arac.* p. 349.)

Schismatoglottis *crispata*; robusta, foliis coriaceis petiolatis oblongis v. ovato-cordatis apiculatis lobis basi rotundatis sinu acuto, lamina luride viridi utrinque inter costam et marginem albo sordido irrorata, petiolo robusto asperulo marginibus crispatulis, vagina auriculata auriculis truncatis, spatha 4–5 pollicari breviter pedunculata lineari-oblonga virescente breviter cuspidata, spadice spathæ æquilonga, parte fœminea mascula breviore annulo organorum neutrorum superata, parte sterili elongato fusiformi-cylindraceo, connectivo truncato, ovariis breviter cylindraceis, stigmate orbiculari, placentis 2 parietalibus.

The number of *Aroideæ* being now introduced into cultivation, from the Islands of the Indian Archipelago especially, is very great, and this is a fortunate circumstance in view of the advance of systematic and descriptive botany; for difficult as is the analysis of these plants in a living state, it is infinitely more so in the dried. Just now, thanks to their frequently variegated foliage, they are favourites in cultivation, but I doubt if they will long continue so. The genera to which they belong have been exceedingly well defined by Dr. Engler, in his "Monograph of the *Araceæ*," a work which proves him to be the worthy successor of the late veteran Dr. Schott, of Schœnbrun, who was no less celebrated for his works on the Order, than he was for the marvellous living collection of species which he brought together in the Gardens of the Emperor of Austria. The genus *Schismatoglottis* is here for the first time figured from living specimens, and its close affinity to *Homalonema* (figured at Tab. 6571) will at once be recognized; the chief difference between these genera is the two- or more-celled ovary of the latter genus, and the micropyle of its ovule being directed upwards.

August 1st, 1881.

Schismatoglottis crispata is one of the many interesting plants introduced from Borneo by Mr. Burbidge when collecting for Messrs. Veitch, and amongst which the *Aroideæ*, which have been studied by Mr. N. E. Brown, of the Kew Herbarium, are conspicuous for their number and novelty. I am indebted to Messrs. Veitch for the specimen here figured, which flowered with them in January of the present year.

Descr. *Stem* very short, robust, as thick as the thumb. *Leaves* five to seven inches long, coriaceous, oblong with a retuse base or ovate-cordate with rounded basal lobes, apiculate, dull green above with dirty white blotches halfway between the costa and midrib; midrib stout, nerves many, rather stout, spreading; petiole two to three inches long, stout, rough, plano-convex, with raised crisped margins; sheath broad, membranous, ending upwards in spreading truncate wings. *Spathe* oblong, cymbiform, shortly peduncled, four to five inches long, pale greenish white. *Spadix* as long as the spathe; female portion shorter than the male, surmounted by a narrow ring of neuter organs, and having a few of these scattered amongst the flowers; male portion much shorter and rather narrower than the terminal fusiform subacute neuter portion. *Anthers* with the connective truncate. *Ovary* cylindric, one-celled; stigma discoid, sessile; ovules parietal, pendulous from the long funicles, with the micropyle downwards.—*J. D. H.*

Fig. 1, Portion of petiole; 2, spadix; 3, cluster of male flowers; 4, single male flower; 5, ovary; 6, vertical section of ditto; 7, transverse section of ditto; 8, ovule:—*all enlarged.*

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Tab. 6577.

ENGELMANNIA PINNATIFIDA.

Native of the Prairies of N. America.

Nat. Ord. Compositæ.—Tribe Helianthoideæ.

Genus Engelmannia, *Torr. et Gr.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 351.)

Engelmannia *pinnatifida*; herba perennis, erecta, pubescens v. hirsuta, foliis alternis petiolatis oblongis sinuato-pinnatifidis, lobis obtusis integris dentatis v. lobulatis, capitulis corymboso-paniculatis longe pedunculatis radiatis heterogamis, fl. radii ♀ 1-seriatis fertilibus, disci ♂ sterilibus, involucri bracteis 2–3-seriatis laxis extimis subfoliaceis coriaceis intimis concavis foliaceo-appendiculatis, receptaculo plano paleis flores involventibus onusto, ligulis elongatis aureis integris, stylo bipartito, fl. disci corolla infundibulari, stylo elongato indiviso, acheniis radii obovatis compressis exalatis 2-aristatis, disci filiformibus sterilibus.

E. pinnatifida, *Torr. et Gr. Fl. N. Am.* vol. ii. p. 283; *Torr. in Marcy Exped. Bot.* tab. 11.

Angelandra pinnatifida, *Endl. Gen. Pl. Suppl.* vol. iii. p. 69; *Walp. Rep.* vol. ii. pp. 609, 976, vol. vi. p. 149; *Ann.* vol. ii. p. 849.

A herb belonging to the same great American tribe of *Compositæ* as the Sunflower, named in honour of the veteran United States' botanist, Dr. Engelmann, of St. Louis in Missouri. It is a native of the prairie region of the central United States, east of the Rocky Mountains, where it extends from the latitude of Canada to that of Texas. I have myself collected it in Colorado, growing in dry, grassy places, where, however, the heads were much smaller than in specimens from further south, and than those cultivated at Kew; on the other hand, I have seen cultivated specimens with the rays much broader and rather shorter than those here figured. Seeds were received at Kew, collected in New Mexico by Dr. Parry, the plants from which flowered in the second year, and have proved perfectly hardy, having been unprotected in the Herbaceous Grounds during the last severe winter. It flowers in the month of July. The

genus is very closely allied to *Lindheimeria* and *Berlandiera*, plants of the same region.

Descr. A hardy perennial herb, one to two feet high, clothed all over with a roughish pubescence or with soft spreading hairs. *Stem* erect, unbranched, cylindric, straight or flexuous. *Leaves* two to five inches long, petioled, oblong, sinuate-pinnatifid to below the middle; lobes spreading and ascending, obtuse, entire toothed or lobulate, especially on the lower margins, one-nerved. *Heads* one to two inches in diameter, corymbosely panicled, on long slender peduncles. *Involucre* of several series of loose coriaceous green bracts, the outermost herbaceous oblong; the innermost orbicular, concave, coriaceous, with a short leafy tip; receptacle flat, clothed with chaffy scales; outer scales lanceolate, adhering in pairs to the base of each involucral bract; inner narrow, obtuse. *Ray-flowers* eight to ten, female, with an elliptic lanceolate golden-yellow ray which is entire at the tip. *Disk-flowers* hermaphrodite, but sterile; corolla funnel-shaped, five-cleft. *Stamens* with the anthers subentire at the base. *Style* of the ray-flowers two-armed, of the disk entire, long, hispid. *Achenes* of the ray broadly obovoid, dorsally much compressed, keeled down the face, hispid, crowned with two short awns, each attached at the base laterally to two scales of the receptacle, anteriorly to a bract of the involucre, and posteriorly to another receptacular scale which encloses a sterile achene; the achene, three scales, and abortive achene and involucral bracts, all fall away together.—*J. D. H.*

Fig. 1, Inner bract of involucre; 2, ray-flower; 3, style-arms of ditto; 4, disk-flower; 5, style-arms of ditto; 6, two outer scales of receptacle with an inner one between them; 7, single scale; 8, achene:—*all enlarged.*

M. S. del. J. N. Fitch Lith.

Vincent Brooks Day & Son Imp.

TAB. 6578.

EUADENIA EMINENS.

Native of Western Tropical Africa.

Nat. Ord. CAPPARIDEÆ.—Tribe CAPPAREÆ.

Genus EUADENIA, *Oliver*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 969.)

EUADENIA *eminens*; suffrutex glaberrimus, caule erecto stricto superne folioso, foliis breviter petiolatis 3-foliolatis, foliolis sessilibus ovato- v. oblongo-lanceolatis longe acuminatis integerrimis, racemo amplissimo corymbiformi multifloro, pedicellis adscendentibus, sepalis oblongo-lanceolatis acutis, petalis longissimis anguste spathulatis planis acutis sulphureis, 2 superioribus erecto-recurvis, 2 inferioribus brevioribus interdum nanis porrectis, staminibus 5 anticis fertilibus, filamentis decurvis dein adscendentibus, antheris oblongis, appendice dorsali lineari apice 5-fida laciniis apice tortis, ovario 2-loculari longe stipitato.

The genus *Euadenia* was established by Professor Oliver upon two tropical African plants, of which one, *E. trifoliolata*, Oliv. (*Stroemia trifoliolata*, Schum. and Thönn.), from Old Calabar and Abbeokuta, is an undoubted congener of the plant here figured, though differing in its racemose flowers; the other, *E.*? *Kirkii*, Oliv., from the Mozambique district, is probably a different genus, which is very imperfectly known. There are also in the Kew Herbarium imperfect specimens, collected by Mann, of what is probably a third species, from an elevation of 3000 feet in the Cameroon Mountains, where it forms a tree 30 feet high. It is remarkable for its celery-like odour when dry. And, lastly, there is also in the Herbarium an individual of *E. eminens*, collected also by Mann on the banks of the Bagroo river in 1861.

E. eminens differs from all the other species in the singularly handsome inflorescence, which resembles a candelabrum in its ramification, the yellow petals looking like pairs of gas jets on each branch. It was introduced from West Africa by Mr. Bull, who kindly communicated

the specimen here figured in January last. It is of course a stove plant.

Descr. Apparently a branching soft shrub, or a herb with soft woody bases to the stems, and probably the branches also, when fully grown. *Branches* terete, knotted. *Leaves* alternate, petioled, three-foliolate, quite glabrous; leaflets four to six inches long, subsessile, ovate-lanceolate, acuminate, quite entire, deep green above, paler beneath; petiole one to three inches long. *Inflorescence* shortly peduncled, terminal, erect, corymbosely candelabriform, eight to ten inches in diameter; peduncle very short, stiff, erect; bracts small, subulate, caducous; pedicels two inches long, slender, spreading and decurved from the rachis, then ascending. *Flowers* erect; *sepals* four, lanceolate, acuminate, half an inch long, green. *Petals* four, sulphur-yellow; two dorsal four inches long, erect, very narrowly linear-spathulate, narrowed into a long claw, flat, smooth, with a midrib and lateral veins; two lower or anterior petals similar, but much smaller or almost wanting, pointing forward. *Fertile stamens* five, anticous, filaments slender, decurved and then ascending, shortly united at the base; anthers small, oblong; barren stamens united into a dorsal strap-shaped, erect body, five-cleft at the tip, the segments curled at the top. *Ovary* small, cylindric, two-celled, on a slender peduncle, very caducous.—*J. D. H.*

Fig. 1, Diagram of the floral organs; 2, flower with the two dorsal petals removed; 3, transverse section of ovary:—*all enlarged*.

A.B. del J N Fitch Lith

Vincent Brooks Day & Son Imp

Tab. 6579.

IRIS missouriensis.

Native of California and the Rocky Mountains.

Nat. Ord. Iridaceæ.—Tribe Irideæ.

Genus Iris, *Linn.*; (*Baker in Journ. Linn. Soc.* vol. xvi. p. 136.)

Iris (Apogon) *missouriensis*; foliis linearibus rigidulis subpedalibus, caulibus 2–3-floris fistulosis sursum angulosis, spathæ valvis magnis lanceolatis apice membranaceis, pedicellis spathæ valvis sæpissime brevioribus, ovario cylindrico-trigono, perianthii tubo brevi infundibulari, segmentis exterioribus oblongis unguiculatis reflexis 2-2½ poll. longis pallidis lilacino-striatis luteo-carinatis, segmentis interioribus erectis lilacinis oblanceolato-unguiculatis exterioribus vix brevioribus, styli cristis subquadratis inciso-dentatis, antheris filamentis æquilongis, capsulis oblongo-trigonis apice et basi cuneatis.

I. missouriensis, *Nuttall in Journ. Acad. Philad.* vol. vii. p. 58; *S. Wats. in Bot. Calif.* vol. ii. p. 140.

I. Tolmieana, *Herbert in Hook. et Arn. Bot. Beech.* p. 395; *S. Wats. in Bot. King. Expedit.* 342; *Baker in Gard. Chron.* 1876, p. 226; *Journ. Linn. Soc.* vol. xvi. p. 138.

This appears to be the commonest Iris of the Rocky Mountains. I place the plant we have long known in England as *Tolmieana* as a synonym of Nuttall's doubtful *missouriensis*, on the authority of Dr. Sereno Watson, who, in the recently-published "Botany of California," states its distribution as follows:—"On the eastern side of the Sierra Nevada from Inyo to Siskiyou county and the Columbia, common in the mountains of the interior eastward to Colorado and Montana, and south to Arizona; apparently the only species of the Great Basin." Whether it be more than a montane variety of the Californian *Iris longipetala* of Herbert (Bot. Mag., Tab. 5298), which is a very much finer plant from a cultural point of view, I greatly doubt. Although long known, it has never been previously figured. Our drawing was made from a plant sent at the end of May from Mr. F. Horsman, of the New Plant and Bulb Company, Colchester.

September 1st, 1881.

Descr. *Rhizome* short, creeping, with fleshy root-fibres. Produced *leaves* about four to a tuft, linear, not more than a foot long, firm in texture, a quarter or a third of an inch broad, narrowed gradually to the point. *Stem* overtopping the leaves, bearing a single terminal cluster of two or three flowers, fistular, subterete in the lower part, angled towards the top. *Spathe-valves* lanceolate, two or three inches long, membranous towards the tip. *Peduncles* nearly always shorter than the spathe-valves. *Ovary* cylindrico-trigonous, three-quarters of an inch or more long at the flowering time. *Perianth-tube* infundibuliform, not more than a quarter or a third of an inch long; outer segments of the limb oblong-unguiculate, reflexing, two or two and a half inches long, veined with lilac-purple on a pale groundwork, and faintly keeled with yellow towards the base of the limb; inner segments nearly as long as the outer, erect, oblanceolate, with a long claw, emarginate, plain lilac-purple. *Stigmas* an inch long, exclusive of the reflexing subquadrate strongly-toothed crests. *Anthers* as long as the filaments. *Capsule* oblong-trigonous, an inch or an inch and a half long, cuneate at the base and apex.—*J. G. Baker.*

Fig. 1, Flower, with the segments of the perianth taken away,—*natural size;* 2, stamens; 3, horizontal section of ovary :—*both enlarged.*

M. J. del. J. N. Fitch Lith.

Vincent Brooks Day & Son Imp.

TAB. 6580.

ALOE MACRACANTHA.

Native of the Cape Colony.

Nat. Ord. LILIACEÆ.—Tribe ALOINEÆ.

Genus ALOE, *Linn.*; (*Baker in Journ. Linn. Soc.* vol. xviii. p. 148.)

ALOE *macracantha*; caudice elongato simplici, foliis 20–30 dense rosulatis lanceolatis pedalibus et ultra 3–4 poll. latis viridibus lineis et maculis albidis confluentibus copiosis decoratis margine aculeis magnis patulis corneis deltoideo-cuspidatis præditis, pedunculo simplici vel furcato, floribus dense corymbosis, pedicellis erecto-patentibus 1–1½ poll. longis, bracteis lanceolatis pedicello brevioribus, perianthii splendide luteo-rubri tubo supra basin constricto, segmentis tubo duplo brevioribus, genitalibus perianthio æquilongis.

A. macracantha, *Baker in Journ. Linn. Soc.* vol. xviii. p. 167.

This is unmistakably the finest of all the spotted Aloes. Its alliance is with *A. Saponaria* and *A. latifolia*, from which it is marked at a glance by its longer caudex, broader leaves, and larger flowers. It is one of the most interesting of the many novelties in succulent plants, discovered by Mr. Thomas Cooper, of Reigate, in his travels through the eastern provinces of Cape Colony, from 1858 to 1862, on behalf of Mr. Wilson Saunders and the Royal Horticultural Society. We have had it growing at Kew to my knowledge since 1870, and it is now widely spread in collections; but so far as I am aware, it has never flowered in cultivation till now. Our drawing was made from a plant that flowered in the Cactus-house at Kew in March of this present year.

DESCR. *Caudex* simple, reaching a length of two or three feet, and a diameter of two or three inches. *Leaves* twenty to thirty in a dense rosette, lanceolate, twelve or fifteen inches long, three or four inches broad below the middle, narrowed gradually from the middle to the tip, one-sixth of an inch thick in the centre, nearly flat on the face, bright

green, with copious lines and oblong confluent whitish blotches, much paler on the convex back, furnished on the margin with large deltoid-cuspidate spreading prickles which are brown and horny in the upper half. *Peduncle* flattened, purplish, glaucous, simple or forked, above a foot long. *Inflorescence* a dense corymb about four inches in diameter; pedicels erecto-patent, an inch or an inch and a half long; bracts lanceolate, shorter than the pedicels. *Perianth* bright yellow, with a tinge of red, nearly two inches long; tube distinctly constricted above the globose base; segments oblong-lanceolate, half as long as the tube. *Stamens* and *style* just reaching to the tip of the perianth-segments; pollen bright red.—*J. G. Baker.*

Fig. 1, Whole plant,—*much reduced;* 2, front and back view of anthers,—*magnified;* 3, pistil,—*natural size.*

M. Sadel, J.N. Fitch Lith.

Vincent Brooks Day & Son Imp.

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TAB. 6581.

PINANGA PATULA.

Native of Sumatra.

Nat. Ord. PALMEÆ.—Tribe ARECINEÆ.

Genus PINANGA, *Blume ;* (*Rumphia*, vol. ii. p. 76.)

PINANGA *patula ;* caudice humili, foliis inæqualiter pinnatisectis, pinnis 8–18-jugis erecto-patulis basi lata adnatis falcato-lanceolatis acuminatis 3–5-nervis terminalibus truncato-dentatis, subtus rachi petioloque minute furfuraceis, rachi dorso convexo antice carinato, petiolo breviusculo teretiusculo, vagina elongata cylindracea longe fissa, spadicibus infra-foliaceis subpinnatim simpliciter v. bis ramosis, ramis curvis crassiusculis compressis rigidis, spatha completa oblonga acuta furfuracea, floribus 3-nis, glomerulis ad margines ramorum spadicis 2-seriatis, in singulo glomerulo 1 fœmineo 2 masculis, fl. ♀ perianthio post anthesin vix aucto, drupis parvis ellipsoideis obtusis scrobiculis spadicis insertis.

P. patula, *Blume in Rumphia*, vol. ii. p. 87, t. 115.

PTYCHOSPERMA patula, *Miquel Fl. Ind. Bat.* vol. iii. p. 26.

SEAFORTHIA patula, *Mart. Hist. Palm.* vol. iii. p. 313.

A beautiful dwarf Palm, a native of the mountains of the Island of Sumatra, belonging to a very distinct genus that extends from the Eastern Himalaya to Borneo, and consists generally of species of small stature and very elegant habit, well suited for stove culture. *P. patula* is closely allied to *P. furfuracea* of the Celebes, which is, however, a much more scurfy plant, with the leaflets toothed towards the top on the lower edge.

P. patula was received at Kew from the Dutch Gardens many years ago, and has flowered and fruited annually in the Palm-house for some time.

DESCR. *Stem* solitary, four to six feet high, slender, one to two inches in diameter, green, smooth, ringed, swollen at the base. *Leaves* four to five feet long, oblong in outline, unequally pinnate, faintly furfuraceous below and on the rachis and petiole ; segments eight to eighteen pairs, erecto-

patent, falcately lanceolate from a broad adnate base, acuminate, sometimes connate in pairs and bifid at the tip, three to five-nerved, the terminal connate and toothed at the tip; rachis rounded at the back, keeled in front between the oblique bases of the leaflets; petiole about half the length of the leaf-blades, rounded in the middle; sheath six inches long, cylindrical, smooth, split down the front, green. *Spadixes* several from the rings on the stem below the leaves, very shortly peduncled, nearly a foot long, bifariously branched, the branches stout, curving horizontally, spreading, vertically compressed. *Spathe* solitary, membranous, compressed, furfuraceous. *Flowers* in two densely packed series on the upper side of the branches of the spadix, to the margins of which they are attached in clusters of three, two being males placed behind a minute female; as the spadix lengthens, the male flowers fall away, the branches thicken, become flattened and yellow in age, bearing the drupes horizontally along the edges, the base of each sunk in a cup-shaped depression. *Drupe* two-thirds of an inch long, ellipsoid, orange-red.—*J. D. H.*

Fig. A, Reduced figure of whole palm; B, young branch of spadix with young fruit; C, old ditto with ripe fruit:—*both of the natural size.* 1, Section of spadix and ovary; 2, seed; 3, vertical section of ditto; 4, embryo:—*all enlarged.*

M.S. del, J.N. Fitch Lith.

Vincent Brooks Day & Son Imp

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Tab. 6582.

PRIMULA poculiformis.

Native of Central China.

Nat. Ord. Primulaceæ.—Tribe Primuleæ.

Genus Primula, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 631.)

Primula *poculiformis*; molliter pubescens v. puberula, foliis gracile petiolatis late oblongo- v. subrotundato-cordatis apice rotundatis lobulato-dentatis subintegrisve membranaceis nervis impressis reticulatis, sinu basi angusta v. lata, scapis gracilibus folia superantibus, floribus umbellatis, bracteis paucis linearibus patentibus inæqualibus, pedicellis gracilibus inæqualibus patulis, calyce poculiformi late infundibulari-campanulato breviter obtuse 5-dentato obscure 5-gono puberulo, corollæ tubo gracili calyce longe excedente, limbo plano 5-fido pallide purpureo fauce nuda, segmentis obcordatis, lobis rotundatis, ovario globoso.

I find no description of this elegant primrose, which with the habit and foliage of *P. cortusioides* (Tab. 399 and 5528) has the calyx of the Himalayan *P. filipes*, Watt MSS., and is one of many instances of China containing species of plants intermediate in character, as in position, between those of Northern India and Japan. It was discovered by Mr. Maries when travelling for Messrs. Veitch in the interior of China, at the Ichang gorge, and flowered at Chelsea in September of last year. *P. filipes*, on the other hand, is a native of rocks at Chuka in Bhotan, at an elevation of 6500 feet, where it was discovered by Griffith, who figured it in his "Icones Plantarum Asiaticarum," t. 485 (Posthumous Papers, vol. ii. p. 123, n. 396, and Notulæ, part iv. p. 299), but without a name; it is very nearly allied indeed to *P. poculiformis* in both habit and form of leaves, calyx and corolla, but is very much smaller in all its parts, with filiform petioles and scapes, and more rounded leaves.

P. poculiformis (so named in reference to the form of the calyx) is probably a very variable plant. The earliest flowering specimens sent by Mr. Veitch were less hairy,

and had rounder and nearly entire leaves, and very much smaller flowers than that here figured. It is an autumn-flowering species, and as it is no doubt hardy, it is sure to be a favourite.

Descr. Softly hairy or nearly glabrous. *Leaves* many from the root, petioled, broadly ovate-oblong, cordate or rounded-cordate, membranous, margins lobulately-toothed or nearly entire, surface much raised between the deeply sunk reticulated nerves; petiole two to four inches long. *Scapes* several from the rootstock, exceeding the leaves. *Flowers* drooping, umbellate; bracts small, few, spreading, linear or subulate, very unequal; pedicels very unequal in length, a quarter to one inch long, pubescent. *Calyx* small, between campanulate and funnel-shaped, obscurely five-angled, pubescent, mouth very shortly five-toothed, teeth very much broader than long, acute. *Corolla-tube* cylindric, twice as long as the calyx or more; limb quite flat, one inch in diameter, pale lilac or purplish, throat with a very obscure thickening at the mouth, segment obcordate with rounded lobes. *Ovary* globose.—*J. D. H.*

Fig. 1, Calyx; 2, ovary:—*both enlarged.*

TAB. 6583.

DROSERA CAPENSIS.

Native of the Cape of Good Hope.

Nat. Ord. DROSERACEÆ.

Genus DROSERA, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 662.)

DROSERA (Rossolis) *capensis*; caule brevi lignescente simplici apice folioso, foliis rosulatis longe petiolatis loriformibus obtusis longe setoso-glandulosis, stipulis connatis membranaceis, scapo elato pilosulo, racemo elongato multifloro ante anthesin deflexo, floribus breviter pedicellatis amplis roseis, sepalis oblongis obtusis glandulosis, petalis orbiculari-obovatis apice rotundatis, antheris triangulari-ovatis connectivo incrassato, ovario ellipsoideo 3-sulcato glaberrimo, stylis 3 sessilibus ad basin 2-fidis segmentis filiformibus patenti-incurvis, stigmatibus capitellatis, placentis 3.

D. capensis, *Linn. Sp. Pl.* p. 403; *Burm. Pl. Afr.* t. 75, f. 1; *Berg. Fl. Cap.* p. 81; *Thunb. Diss.* p. 6, *Flor. Capens.* p. 620; *DC. Prodr.* vol. i. p. 318; *Planch. in Ann. Sc. Nat.* ser. 3, vol. ix. p. 196; *Harv. et Sond. Fl. Cap.* vol. i. p. 77; *Belgique Hortic.* 1880, t. 16; *Gard. Chron.* N.S., vol. iv. p. 105, f. 20 B.

The genus *Drosera*, though so widely spread over the cold and hot regions of the globe, does not abound in species in any one country, except Australia, which contains about half the known species, forty-one being described in the "Flora Australiensis." Next to this country the Cape of Good Hope with eight is perhaps the richest for its area. Unlike the European Droseras, many of those of the Cape and Australia inhabit places which are wet only during the rainy season, and are burnt up during the dry, which renders these species difficult of cultivation under artificial conditions. Of these again some have hybernating roots, needing no water during the season of rest, whilst others have woody stems or rhizomes, with minute fibrillous roots that penetrate far for water, and supply the little that is needed for the life of the winter bud.

D. capensis is apparently one of the latter class, and its woody short stock or stem resembles that of *Drosophyllum*

(Tab. 5796), which grows in places that are wet in spring and winter, but very dry in summer.

Some of the noblest forms of *Dorseraceæ* are found at the Cape, but have never been introduced; such are *Drosera pauciflora* and *cistiflora*, with petals sometimes an inch long, with a dark spot at the base, and the two species of the genus *Roridula*, which are shrubs, and of which one is used as a "Fly-catcher" by the Boers in their rooms.

D. capensis was introduced by Messrs. Veitch; it flowered in a cool greenhouse in the Royal Gardens in July. Native specimens attain eighteen inches in height, with several scapes, and leaves six to ten inches long.

Descr. *Stem* one or two inches high, erect, simple, clothed with remains of leaf-bases and stipules. *Leaves* crowded at the top of the stem, four to eight inches long, spreading; blade as long as the petiole, one-fourth of an inch wide, strap-shaped, obtuse, clothed with long red gland-tipped hairs; petiole stout, hairy. *Scape* stout, much longer than the leaves, hairy and slightly glandular. *Raceme* three to six inches long, many-flowered, sharply decurved before flowering, ascending as the flowers open. *Flowers* opening one at a time, an inch in diameter, pale rose-red; pedicels short. *Sepals* elliptic-oblong, obtuse. *Petals* orbicular-obovate. *Anthers* with a broad connective and the cells spreading below. *Ovary* oblong, three-grooved, with three placentas; stigmas three, divided to the base into two spreading and then ascending filiform divisions, each with a capitate stigma.—*J. D. H.*

Fig. 1, Portion of leaf; 2, glandular ovule; 3, stamens; 4, ovary; 5, transverse section of ditto:—*all enlarged.*

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Tab. 6584.

NUNNEZHARIA tenella.

Native of Mexico.

Nat. Ord. Palmeæ.—Tribe Arecineæ.

Genus Nunnezharia, *Ruiz et Pav.*; (*Prodr.* 147, p. 31.)

Nunnezharia *tenella*; pygmæa, dioica, caudice gracile stricto erecto, foliis obovato-oblongis apice 2-fidis lobis acutis convexis marginibus recurvis obscure crenato-serratis, nervis utrinque 8–10 profunde impressis, petiolo brevi, vagina pollicari, spadicibus simplicibus gracilibus elongatis pendulis, fœmineis graciliоribus laxius floriferis, spatha basilari pedunculo gracili multo breviore ceteris brevibus lanceolatis, floribus masculis oblongo obovoideis in spicam elongatam dispositis, sepalis brevissimis multo longioribus quam latis, petalis obovatis basi connatis apicibus cohærentibus marginibus supra basin remotis, staminibus 6 basi petalorum insertis, filamentis subulatis, antheris oblongis, ovarii rudimento columnari, floribus fœmineis globosis calyce maris, petalis orbiculatis concavis late imbricatis, staminodiis minutis, ovario globoso 3-loculari, stigmatibus brevissimis, baccis pisiformibus glaberrimis luride viridibus.

Chamædorea *tenella*, *Wendl. in Gartenflora*, 1880, p. 102.

This is perhaps the smallest known Palm. Our male specimen is exactly nine inches high; and the female seven, yet it ripened its fruit well. It belongs to a section of the genus with the sexes on different plants, but of all the subgenera or tribes, described as genera by Œrsted, I cannot refer it to any.

I regret having to give the clumsy name of *Nunnezharia* the preference over the well-known and more euphonious one of *Chamædorea*, but as it has the priority by nearly thirty years, and the genus is extremely well described under that name by the learned author of the Flora of Peru and Chili, no other course is open to me; Willdenow indeed reduced it for euphony's sake to *Nunnezia*, but no author has followed him. *Nunnezharia tenella* was introduced from Mexico into the Botanic Garden of Zurich by M. Ortegris, and from thence into the Royal Botanic Gardens of Herrenhausen, in Hanover, by Dr. Wendland, to whom the Royal Gardens of Kew are indebted for the specimens

here figured, which were received in 1879, and flowered in April of the present year.

Descr. A diminutive Palm, a span high, erect, stout for its size, dark green, glabrous. *Caudex* rooting from the lower nodes, as thick as a goose-quill, clothed above with the leaf sheathes. *Leaves* shortly petioled, four to five inches long by three broad, spreading, convex, obovate-oblong, remotely obtusely serrate, bifid for one-third of their length, the segments and sinus acute, base rounded; nerves eight or nine pair, straight, deeply impressed; petiole one-fourth to one-half an inch long, grooved above; sheath about an inch long, cylindric, smooth, mouth with a brown membranous border. *Spadixes* as long as the palm, drooping, slender, unbranched; males longest, with most numerous and much the largest flowers; rachis slender but stouter than the peduncle, yellowish; peduncle very slender; spathes membranous, linear-lanceolate, the lowest not half the length of the peduncle. *Flowers* spiked, ebracteate and ebracteolate, yellow; male one-twelfth of an inch long. *Calyx* a very shallow three-lobed membranous cup. *Petals* thinly fleshy, obovate-oblong, obtuse, cohering by their tips, connate at the base, the margins not juxtaposed above the base, but leaving a space between the contiguous pairs. *Stamens* attached to the base of the petals, filaments subulate; anthers oblong. *Rudimentary ovary* columnar. *Female flowers* minute, fewer on the spadix and more scattered than the males, globose. *Calyx* as in the male. *Petals* orbicular, imbricate, and closely embracing the globose ovary. *Staminodes* minute. *Ovary* three-celled; stigmas minute, recurved; ovules attached below the middle of the septum. *Berry* globose, one-third of an inch in diameter, almost black-green, smooth, shining, one-seeded. *Seed* erect, globose.—*J. D. H.*

Fig. A, reduced figure of male plant; B, leaf and male spadix *of the natural size*; C, female spadix *of the natural size*. 1, male flower; 2, two petals of same and four stamens; 3, stamen; 4, female flower; 5, vertical, and 6, transverse section of ovary; 7, vertical section of fruit:—*all enlarged*.

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Tab. 6585.

BABIANA SOCOTRANA.

Native of the Island of Socotra.

Nat. Ord. Irideæ.

Genus Babiana, *Ker.*; (*Baker in Journ. Linn. Soc. Lond.* vol. xvi. p. 164.)

Babiana *socotrana;* parvula, acaulis, glaberrima, bulbi tunica reticulatim fibrosa, foliis anguste lanceolatis sensim acuminatis rigidulis plicatis et striato-nervosis, floribus solitariis parvis inter folia sessilibus, spathæ valvis linearibus, perianthii tubo elongato gracillimo, limbo bilabiato ringente pallide violaceo, segmentis elliptico-lanceolatis acutis.

This is one of the most remarkable discoveries of Dr. I. B. Balfour's exploration of the Island of Socotra in 1879-80; the genus *Babiana* being previously known as South African only, though extending from the Cape itself as far north as the Transvaal.

Hence in respect of the distribution of Cape types of vegetation, the occurrence of a *Babiana* to the north of the Equator, and especially so far east as the Arabian Sea, is a very interesting fact; for it is another instance of that botanical affinity of Socotra with the Cape which I have alluded to under *Begonia socotrana* (Tab. 6555). Singularly enough, no species of the genus occurs in Angola, or any of the collections from the Lake regions of Central Africa, where, however, it may be expected to occur when these are better botanically explored.

I can find no generic difference at all between *B. socotrana* and the South African *Babianas;* it is, however, much the smallest known species of the genus, and is one of the few that is perfectly glabrous. Its nearest affinity is with *B. plicata* (Tab. 576).

The Royal Gardens are indebted to Dr. Balfour for bulbs of this plant, which flowered in September, 1880, in the bulb-pit.

October 1st, 1881

Descr. Perfectly glabrous, stemless, three to four inches high. *Bulbs* one-half to three-quarters of an inch in diameter, subglobose, suddenly narrowed into a neck half an inch long, clothed with firmly reticulated brown fibres. *Leaves* bifarious, three to four inches long by three-quarters of an inch broad, narrowly lanceolate, gradually acuminate from beyond the middle, rigid, plaited, and with many strong nerves; petiole oblique, broad, compressed. *Flowers* solitary, almost sessile, the ovary being sunk amongst the uppermost leaves. *Spathes* linear. *Perianth-tube* an inch and a quarter long, very slender; limb nearly one inch broad, pale violet-blue, distinctly two-lipped; segments elliptic, acute, nearly equal. *Stigmas* not much protruded, deep violet-blue.—*J. D. H.*

Fig. 1, Reticulate fibres of the bulbs; 2, petiole of leaf, spathe, and perianth-tube; 3, transverse section of ovary:—*all enlarged.*

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Tab. 6586.

ARISTOLOCHIA ALTISSIMA.

Native of Sicily and Algeria.

Nat. Ord. Aristolochieæ.

Genus Aristolochia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. iii. p. 123.)

Aristolochia (Diplolobus) *altissima*; herba v. suffrutex volubilis, gracilis, glaberrima, caule basi fruticoso 6-gono, foliis petiolatis persistentibus rigidulis nitidis ovato-cordatis 5–7-nerviis undulatis acutis v. obtusis sinu lato v. angusto, lobis rotundatis, nervis reticulatis, floribus axillaribus solitariis longe gracile pedunculatis folia non excedentibus, ovario clavato 6-gono, perianthii utriculo parvo globoso, tubo elongato curvo e basi sensim ampliato, limbi ore valde obliquo ovato-lanceolato subacuto tubo breviore, marginibus inferne recurvis.

A. altissima, *Desf. Fl. Atlant.* vol. ii. p. 324, t. 249; *Guss. Synops. Fl. Siculæ*, vol. ii. pars i. p. 559; *Bertol. Fl. Ital.* vol. ix. p. 641; *Duchartre in DC. Prodr.* vol. xv. pars i. p. 489; *Boiss. Flor. Orient.* vol. iv. p. 1075.

This is a hardy climber, well worthy of cultivation on account of its bright-green glossy foliage and very elegant habit. It has a pretty wide geographical range from Algeria, Sicily, and the kingdom of Naples to Greece, Cyprus, the Lebanon and Antilebanon.

The flowering time of this plant seems very capricious. In De Candolle's Prodromus it is said to flower in Algeria in December, and in May and June or throughout the year in Sicily; at Kew and in Paris it blossoms in June, July, and August, and I have seen flowering specimens from Algeria which are dated May. It would thus appear to have in the Mediterranean region a flowering season of at least eight months.

Aristolochia altissima has been long cultivated at Kew, though it does not appear in Aiton's "Hortus Kewensis." It has stood against an East wall throughout the last two severe winters, though cut to the ground, where its roots were protected by a little cocoa-nut refuse. It flowers profusely.

October 1st, 1881.

Desch. A glabrous slender twiner, growing eight feet high, copiously leafy. *Stem* woody below, branches six-angled. *Leaves* petioled, two to three inches long, ovate-cordate, obtuse or acute, waved, thinly rigid, bright glossy green, basal lobes rounded, sinus broad or narrow, nerves five to seven strong beneath, both surfaces finely reticulated; petiole one-half to three-quarters of an inch long. *Flowers* on slender pedicels, about half as long as the leaves. *Ovary* club-shaped, pubescent, six-ribbed. *Perianth* about one and a half inch long, curved almost in a semicircle, pale yellow-brown, striped with dark red-brown; utricular base of the perianth globose, tube gradually enlarged from the base to the elongate ovate oblique limb, which is obtuse and yellow within, margins recurved Crown of *stigma* very short, of six small broadly ovate lobes, beneath which is the ring of small sessile anthers.—*J. D. H.*

Fig. 1, Vertical section of flower; 2, ovary; 3, transverse section of ditto:—*all enlarged.*

A. B. del. J. N. Fitch Lith.

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TAB. 6587.

VERONICA CARNOSULA.

Native of New Zealand.

Nat. Ord. SCROPHULARINEÆ.—Tribe DIGITALEÆ.

Genus VERONICA, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 964.)

VERONICA (Decussatæ) *carnosula;* fruticulus fere glaberrimus, robustus, ramosus, albo-glaucescens, erectus v. decumbens, ramis oppositis erectis inferioribus crebre cicatricatis, ramulis glabris v. puberulis, foliis imbricatis sessilibus erecto-patentibus ellipticis concavis crasse carnosis integerrimis enerviis subtus ecarinatis, spicis confertis axillaribus et subterminalibus pedunculatis brevibus subglobosis densifloris glabris v. puberulis, floribus sessilibus, bracteis coriaceis sepalisque oblongis obtusis puberulis, corolla alba lobis lateralibus et antico rotundatis, dorsali oblongo, capsula acuta glabra.

V. carnosula, *Hook. f. Handbook of New Zealand Flora*, p. 210.

V. lævis, var. β carnosula, *Hook. f. Fl. Nov. Zeald.* vol. i. p. 194.

The distinguishing characters of the shrubby Speedwells of New Zealand are very difficult to define when examined in a living state, and impossible in the dry. Indeed, I think it probable that future investigators may find material that will unite several of them, and amongst these *V. carnosula* with *V. pinguifolia* (Tab. 6147). As grown at Kew, these two are distinguished at once by the glaucous almost white colour of *V. carnosula*, in contrast with the deep green of *pinguifolia*, but in the Herbarium their best diagnostic character is the acute glabrous ovate capsule of the latter, as compared with the obovate oblong rounded or emarginate one of the latter. Both approach closely to *V. lævis*, Benth., and *buxifolia*, Benth., which have keeled leaves, like those of another very closely-allied plant, *V. Traversii* (Tab. 6390); and all are referable to the type of the New Zealand *V. elliptica*, Forst., discovered during Cook's second voyage, and which inhabits also Fuegia (specimens from whence are described as *V. decussata* by Aiton in the "Hortus Kewensis"). Baron Mueller has

indeed, as stated under *V. Traversii*, united most of these and others with *V. elliptica*, under the common name of *V. Forsteri*.

V. carnosula is a native of the Middle Island of New Zealand; it was discovered by the late Mr. Bidwill in the mountains of the Nelson province, where it ranges from 2200 to 5000 feet, flowering in January. It was, I believe, first raised in Britain by the veteran horticulturist, Mr. I. A. Henry, of Hay Lodge, Trinity, Edinburgh, and is now not uncommon in gardens under the name of *V. pinguifolia*. It is not quite hardy at Kew, but very nearly so, and flowers in the open border in July and August.

Descr. A small robust much-branched erect or decumbent whitish shrub, glabrous or nearly so; branches scarred by the fall of the old leaves. *Leaves* spreading and imbricate, one-fourth to one-half of an inch long, sessile, elliptic or obovate, obtuse, quite entire, concave, very thickly leathery, without midrib or nerves on either surface. *Spikes* subglobose, axillary, peduncled, three-fourths of an inch in diameter; peduncle stout, longer or shorter than the leaves. *Flowers* white, sessile, one-third of an inch in diameter; bracts coriaceous, oblong, about as long as the oblong calyx segments; both puberulous. *Corolla-tube* very short; lobes spreading, two lateral and anticous rounded obtuse, posticous oblong rounded at the tip. *Anthers* reddish-yellow. *Capsule* (in dried specimen) ovoid, acute, glabrous.—*J. D. H.*

Fig. 1. bract, calyx, and style; 2, flower; 3, stamens; 4, ovary; 5, narrower section of ditto:—*all enlarged*.

A B del J N Fitch Lith

Vincent Brooks Day & Son Imp

Tab. 6588.

CAMPANULA Allionii.

Native of the Alps of Piedmont and Savoy.

Nat. Ord. Campanulaceæ.—Tribe Campanuleæ.

Genus Campanula, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 561.)

Campanula (Medium) ***Allionii*** ; humilis, pilosiuscula, rhizomate elongato ramulos foliosos breves emittente, caulibus simplicibus 1-floris basi foliosis, foliis rosulatis linearibus obtusis v. subacutis fere integerrimis primariis obovato-spathulatis, caulinis paucis linearibus basi lata sessilibus, flore magno nutante, lobis calycinis ovato- v. lineari-lanceolatis acutis, sinubus appendicibus pilosis reflexis obtusis, corolla campanulata ampla, ovario 3-loculari.

C. Allionii, *Villars Fl. Delph.* p. 18, *Fl. Dauph.* vol. i. pp. 302, 383, et vol. ii. p. 512, t. 10; *Lam. et DC. Fl. Franc.* n. 2851; *Alph. DC. Prodr.* vol. vii. p. 461; ***Reichb. Ic. Fl. Germ.*** **vol. xix. t. 1591.**

C. alpestris, *Allioni Fl. Pedem.* p. 113, t. 6, f. 3, *non Lapeyr.*

C. nana, *Lamk. Dict.* vol. i. p. 585.

The habit of this local and very beautiful campanula is peculiar, the stem proper consisting of an underground branching rhizome, which gives off numerous rather distant leafing and flowering stems a few inches high, each bearing a flower, which is the largest for the size of the plant of any species of the genus. This habit adapts it well for its chosen habitats, which are the moving slopes of soil at the bases of precipices. Its range in the Alps is confined to those of Piedmont and Savoy, two of its principal stations being Mont Cenis and Mont Ventoux.

C. Allionii was introduced by G. Maw, Esq., who sent me the specimen here figured in June, 1879, from his rich garden at Brosely in Shropshire.

Descr. *Rootstock* subterranean, slender, creeping, sending out rather distant leafing and flowering stems three to five inches high. *Leaves* few, lower crowded or rosulate, one to two inches long, linear from a broad sessile base, slightly

hairy or hispid, obtuse or subacute, quite entire, midrib distinct; there are often below the ordinary leaves a few obovate spathulate ones, which are the first formed on the shoots; cauline leaves one or two, like the lower but more erect. *Flowering-stem* rather stout, hispid or glabrescent. *Flower* inclined or nodding, nearly an inch and a half long, and as broad across the mouth. *Calyx-lobes* ovate- or linear-lanceolate, acute, spreading and recurved, green, hispid, half as long as the corolla; sinuses with a reflexed broadly ovate hispid appendage. *Corolla* bright violet-blue, mouth open, tube hardly angled; lobes triangular ovate, recurved, about one-third the length of the tube, slightly bearded at the tips. *Stamens* with a very short two-lobed pubescent filament, which is broader than long; anther slender. *Ovary* three-celled; style short, slender, stigmas linear revolute.—*J. D. H.*

Fig. 1. Vertical section of flower, *of the natural size;* 2, stamens; 3. ovary, style, and stigma; 4, stigmas; 5, transverse section of ovary :—*all enlarged.*

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Tab. 6589.

AGAVE Hookeri.

Native of Mexico.

Nat. Ord. Amaryllidaceæ.—Tribe Agaveæ.

Genus Agave, *Linn.*; (*Kunth Enum.* vol. v. p. 818.)

Agave (Euagave) *Hookeri*; acaulis, foliis 30–40 dense rosulatis lanceolatis coriaceo-carnosis 4–5-pedalibus viridibus (junioribus solum leviter glauco tinctis) e medio 6–8 poll. lato ad spinam validam terminalem secus margines breviter decurrentem sensim angustatis, aculeis marginalibus corneis brunneis deltoideo-cuspidatis modice validis, pedunculo crasso 30-pedali, floribus in paniculam rhomboideam ramis dense corymbosis dispositis, pedicellis semipollicaribus, bracteolis scariosis lanceolatis, ovario cylindrico-trigono sesquipollicari, perianthii tubo brevissimo, segmentis lanceolatis luteis ovario æquilongis, filamentis limbo duplo longioribus, antheris magnis linearibus, stylo demum staminibus æquilongo.

A. Hookeri, *Jacobi in Hamburg Gartenzeit.* vol. xxii. p. 168; *Monogr.* p. 219; *Baker in Gard. Chron.* 1877, vol. ii. p. 718.

A. Fenzliana, *Jacobi in Hamburg Gartenzeit.* vol. xxii. p. 170.

A. inæquidens, *K. Koch in Wochenschrift*, 1860, p. 28?

This is one of the giant Agaves of the *Americana* group, which flowered for the first time, so far as botanical records extend, at Kew last year, and our drawing is made from a specimen which, for the six winter months, was one of the principal attractions of the Palm House. When the veteran monographer of the genus *Agave*, Lieutenant-General von Jacobi, visited Kew about the year 1865, he found in our collection three new species, which he named *Hookeri*, *Thomsoniana*, and *Smithiana*. The original type of *Hookeri*, from which his diagnosis and description, which were published in the "Hamburg Gartenzeitung" in 1866, were drawn up, we still possess, but it has never flowered. The present specimen belonged to Mr. Wilson Saunders, and differs a little from the type by its smaller and more distant prickles. I feel satisfied that Jacobi's *Agave Fenzliana* is the same species, and think they will most likely both prove

to be conspecific with the *A. inæquidens* of Dr. Karl Koch, described from flowerless specimens in the Berlin Botanic Garden in 1860.

Descr. Acaulescent. *Leaves* thirty or forty in a rosette, lanceolate, firm in texture for the genus, four or five feet long, six to nine inches broad at the middle, green with only a slight glaucous tinge in a young stage, narrowed gradually to a pungent brown end-spine above an inch long, which is decurrent along the edges as a narrow entire brown horny line, for four or six inches, a quarter of an inch thick in the middle, three or four inches thick at the base, the marginal prickles deltoid-cuspidate, dark brown, an eighth or a six of an inch long. *Inflorescence* thirty feet long, the peduncle four or five inches thick at the base, furnished with numerous lanceolate squarrose bract-leaves. *Panicle* rhomboid, four or five feet long by a couple of feet in diameter; flowers arranged in dense corymbs at the end of the spreading or ascending branches; pedicels reaching half an inch in length; bracteoles lanceolate, scariose. *Ovary* cylindrical-trigonous, green, an inch and a half long; perianth-tube very short; segments lanceolate, pale yellow, as long as the ovary. *Filaments* twice as long as the perianth-segments; anthers linear, under an inch long. *Style* not developed till after the anthers, finally as long as the filaments.—*J. G. Baker.*

Fig. 1, Flower, *natural size;* 2, anther, *enlarged;* 3, vertical section of developed ovary, *natural size.*

A.D. del. J.N. Fitch Lith.

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Tab. 6590.

CAMPANULA Tommasiniana.

Native of Istria.

Nat. Ord. Campanulaceæ.—Tribe Campanuleæ.

Genus Campanula, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 561.)

Campanula (Eucodon) *Tommasiniana*; glaberrima, caulibus e rhizomate confertis erectis simplicibus gracillimis, foliis radicalibus nullis, caulinis patulis et decurvis sessilibus v. breviter petiolatis lineari-lanceolatis acuminatis grosse serratis, floribus racemosis secundis gracile pedicellatis nutantibus, calycis tubo obconico, limbi lobis brevibus subulatis integerrimis v. crenatis, corollæ campanulatæ tubo cylindraceo, lobis brevibus triangularibus v. oblongis obtusis v. subacutis.

C. Tommasiniana, *Reuter Cat. Hort. Genev.* 1865, p. 4.

C. Waldsteiniana, *var.* Freyeri, *Reichb. f. Ic. Flor. Germ.* vol. xix. p. 117, t. 601.

Though long known under the name of *Campanula Waldsteiniana*, this would seem to be a different plant from the Croatian one published under that name. It was first recognized as an undescribed species by Dr. Reuter, of Geneva, who described it from specimens cultivated in the Botanical Gardens of that city under the former name, and who called it after the eminent botanist who seems to have discovered it. Its native country is Monte Maggiore in Istria, whence it was sent, under the name of *Waldsteiniana*, to M. Boissier, by whom specimens were communicated from his garden in Valeyres to M. J. Gay in 1856, and which are preserved in the Kew Herbarium. The true *C. Waldsteiniana* appears to be a much smaller species, with few flowers, obtuse lower leaves, and a shorter broader corolla, cleft half-way down into narrower and more acute lobes. I have seen no authentic specimens of it.

C. Tommasiniana is quite hardy; it has been cultivated for some years at Kew in the open border, and flowers profusely in the month of August.

Descr. Quite glabrous. *Stems* numerous from a small

perennial rootstock, six to ten inches high, very slender, strict or flexuous, subsimple. *Radical* leaves none; cauline numerous, one to two inches long, narrowly lanceolate, acuminate, sessile or narrowed into a short petiole, serrate. *Flowers* numerous, racemose towards the tips of the stems, secund, drooping, on slender pedicels, which are one-half to two-thirds of an inch long. *Calyx* short, obconic, without folds between the lobes, which are very slender, subulate, spreading or recurved, and quite entire or subcrenate. *Corolla* one-half to three-fourths of an inch long, cylindric-campanulate, pale blue; lobes short, triangular-oblong, obtuse or subacute, slightly spreading. *Stamens* with pubescent filaments dilated at the base; anthers linear. *Style* slender; stigma cylindric.—*J. D. H.*

Fig. 1, Flower cut open vertically; 2, front, and 3, back view of stamens; 4, stigma; 5, transverse section of ovary; 6, ovules:—*all enlarged.*

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Tab. 6591.

DENDROBIUM Treacherianum.

Native of Borneo.

Nat. Ord. Orchideæ.—Tribe Dendrobieæ.

Genus Dendrobium, *Swartz*; (*Lindl. Gen. et Sp. Orchid.* p. 74.)

Dendrobium *Treacherianum*; rhizomate repente, pseudobulbis ovoideis curvis obtuse 5–6-gonis faciebus concavis pallide viridibus rubro-tinctis, foliis 2-nis oblongis v. lineari-oblongis obtusis v. apice emarginatis coriaceis luride viridibus, scapo gracili paucifloro, vaginis membranaceis elongatis, floribus erectis sesquipollicaribus, bracteis angustis membranaceis ovarium gracile vaginantibus et æquantibus, sepalis porrectis lineari-lanceolatis acuminatis pallide roseis lateralibus basi dilatatis in gibbum subhemisphericum purpureo-striatum connatis, petalis sepalo dorsali consimilibus et æquantibus, labello petalis breviore 3-lobo, lobis lateralibus angustis antice truncatis angulo obtuso, intermedio elongato lineari-oblongo acuminato membranaceo, disco 5–7-carinato carinis subcristatis, mento obtuso, columna elongata apice 3-fida.

D. Treacherianum, *Reichb. f. MSS.*

This remarkable form of Dendrobe belongs to the section with creeping rhizomes and two-leaved pseudobulbs, which imitate the *Bolbophylla*, and frequent the same forests in the Malayan Peninsula and Islands. Its nearest ally is the Bornean *D. cælogynoides*, Rchb. f. It is a native of Borneo, and was imported from thence by Messrs. Low, of Clapton, and named in compliment to W. H. Treacher, Esq., Colonial Secretary, Labuan. The specimen here figured was communicated by Messrs. Low in July last.

Descr. *Rhizome* stout, creeping. *Pseudobulbs* numerous, crowded, two to three inches long, ovoid, curved, five- or six-angled, the angles prominent and rounded, the faces very unequal, concave and smooth, dull brownish green, with blood-red stains chiefly towards the tips and down the angles. *Leaves* in pairs, three to four inches long by one-half to three-quarters of an inch broad, linear-oblong, coriaceous, stiff, tip rounded or notched, keeled at the back, striate, dull dark green; sheaths at the base subcylindric.

November 1st, 1881.

Scape terminal on the pseudobulb, stiff, slender, unbranched, two- to three-flowered; sheaths cylindric, elongate, red-brown, membranous, closely embracing the scape. *Bracts* as long as the ovary, like the sheaths membranous, deciduous. *Peduncles* curved, together with the slender ovary nearly an inch long. *Flower* suberect, upwards of one and a half inch long, pale rose-red, sepals and petals all pointing forward or slightly recurved, membranous. *Sepals* narrowly lanceolate, acuminate, dorsal straight; lateral connate at the dilated bases into a rounded gibbosity or obtuse spur striped with red, margins recurved. *Petals* like the dorsal sepal and as long. *Lip* rather shorter than the petals and darker red, three-lobed; lateral lobes narrow, equalling the column, anterior angles prominent, rounded; mid-lobe linear-oblong, rather dilated beyond the middle, then acuminate, three-ridged down the middle, margins membranous. *Column* rather long, trifid at the top, dorsal lobe as long as the anther-case.—*J. D. H.*

Fig. 1, Column and lip; 2, column; 3, pollen masses:—*all enlarged.*

A.B. del. J.N. Fitch, Lith.

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Tab. 6592.

OLEARIA Haastii.

Native of New Zealand.

Nat. Ord. Compositæ.—Tribe Asteroideæ.

Genus Olearia, *Mœnch.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 276.)

Olearia *Haastii*; fruticosa v. arborea, robusta, foliosa, ramulis canis, foliis breviter petiolatis crasse coriaceis ellipticis v. ovato- v. lineari-oblongis obtusis v. subacutis integerrimis supra glabris luride viridibus, subtus appresse albo tomentosis, nervis creberrime reticulatis utrinque obscuris, cymis numerosis laxis gracile pedunculatis corymbiformibus polycephalis, capitulis breviter pedicellatis pauciflоris, involucri cylindraceo-campanulati squamis duris canis oblongis obtusis, ligulis 3–5 albis elliptico-oblongis obtusis, pappi setis inæquilongis albis, **acheniis angustis vix compressis subsericeis.**

O. Haastii, *Hook. f. Handbook of New Zealand Flora*, pp. 127, 732; *Masters in Gard. Chron.* 1872, p. 1195, *cum ic. xylog.*

This is one of the very few New Zealand plants which has proved hitherto to be perfectly hardy in the East of England; it was introduced in 1858 by the elder Veitch, of Exeter, when I proposed for it the name of *Eurybia parvifolia*; but it was subsequently described from native specimens by myself in 1864, under the name it now bears. In New Zealand it forms a small bushy tree with very stout branches, densely clothed with deep green foliage, and of a rounded form, powdered over with the numerous flower-heads. It has been found only in the mountains of the Middle Island, from the province of Canterbury, at 4000 to 5000 feet elevation, to Otago, varying a good deal in habit and foliage; specimens from the northern locality being more stout, with short broad leaves, like those of our plate, whilst those from the Otago province have larger heads of flowers, and oblong-lanceolate leaves two inches long.

The genus *Olearia* (which includes *Eurybia*) is a very large one, confined to New Zealand and Australia, where

many of the species are known as Daisy trees. Only two have hitherto been figured in the Botanical Magazine, namely, *O. Gunniana* (Tab. 4638), a Tasmanian species, which has been cultivated for many years against a wall at Kew (where, however, it does not thrive); and *O. dentata* (Tab. 5973), a very beautiful plant, a native of New South Wales, and which after standing for several years, I believe, in the open air at Kew, was killed by the cold winter of 1870. It was figured from plants cultivated in Scilly, where I hope it still lives.

O. Haastii has been cultivated in England ever since its first introduction, but has not, as far as I am aware, reached the arboreous dimensions which it attains in New Zealand. It flowers in August and September.

Descr. A stout large shrub or small tree, with thick woody branches, the ultimate ones hoary with appressed pubescence. *Leaves* crowded, three-quarters to one inch long, shortly petioled, elliptic or ovate-oblong, obtuse or subacute, very coriaceous, dull dark green above, white but not shining beneath, with firmly appressed down; nerves closely reticulate but obscure on both surfaces. *Heads* numerous, shortly pedicelled, in lax or dense subterminal corymbose hoary cymes; peduncles usually much longer than the leaves; branches slender, with small leaves at the forks. *Involucre* one-fourth to one-third of an inch long, cylindric; bracts erect, oblong, obtuse, hoary, margins scarious. *Ray-flowers* two to five, rarely more; ligule one-fourth of an inch long, elliptic-oblong, entire or minutely toothed at the tip, white. *Disk-flowers* four to six or more, yellow. *Pappus-hairs* unequal, scabrid, white. *Achenes* narrow, hardly compressed, silky.—*J. D. H.*

Fig. 1, Head; 2, involucral bracts; 3, ray-flower; 4, pappus-hair; 5, style-arms of ray-flower; 6, disk-flower:—*all enlarged.*

M.S. del J.N. Fitch Lith

Vincent Brooks Day & Son Imp

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Tab. 6593.

INCARVILLEA Koopmannii.

Native of Turkestan.

Nat. Ord. Bignoniaceæ.—Tribe Tecomeæ.

Genus Incarvillea, *Juss.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 662.)

Incarvillea *Koopmannii*; perennis, erecta, gracilis, glaberrima, caulibus simpliciusculis teretibus, foliis ovato-oblongis petiolatis pinnatisectis, segmentis lineari- v. oblongo-lanceolatis acuminatis integerrimis v. pauci-serratis superioribus 3-sectis v. pinnatifidis, floribus paniculatis, pedicellis oppositis elongatis basi bracteatis, calyce parvo campanulato breviter 5-dentato, corollæ magnæ roseæ tubo a basi breviter cylindraceo elongato sensim ampliato, limbi obscure 2-labiati 5-lobi lobis æqualibus rotundatis, antherarum loculis puberulis.

I. Koopmannii, *W. Lauche in Deutsche Gart. Monatschrift.* 1880, 39, *cum ic.*; *Gard. Chron.* 1880, p. 725.

This is a very interesting as well as beautiful plant, so closely resembling some states of the Himalayan *Amphicome arguta*, that had it come from India it might hastily have been put down as a slight variety of that species. A comparison, however, with another very closely allied Turkestan plant, *Incarvillea Olgæ*, Regel (Gartenfl. 1880, p. 3), suggests that it may be a link between *Amphicome* and *Incarvillea*, and indeed help to unite these genera. The generic characters of the two are, that *Amphicome* is perennial, with the wings of the seed split up into fine hairs, whilst *Incarvillea* is strictly an annual, with the membranous seed-wing quite entire. Now *I. Olgæ* is described by Regel as probably biennial, and having an oblong entire membranous wing to the seed; and *I. Koopmannii* is described by Lauche as a shrub with flat winged seeds. Thus the difference between these genera is reduced to the condition of the seed-wing, which assuredly does not coincide with habit, for that of the two Turkestan plants is very unlike *Incarvillea* and wholly that of *Amphicome*, as a comparison with *A. Emodi* of our plate 4890 shows. It is

a good instance of the late R. Brown's sagacity, that he induced Royle to reduce his proposed genus *Amphicome* (Ill. Bot. Himal. 295) to a subgenus of *Incarvillea*; a course which Lindley did not adopt, when, in the Botanical Register (1838, t. 19), he restored it, giving Royle the authority for the generic name.

I. Koopmannii was discovered near Taschkend by the traveller whose name it bears, and was communicated to Kew by our excellent correspondent, Max Leichtlin, of Baden; it flowered copiously in July, and remained in flower for several weeks against a warm wall. I retain it as a species distinct from *I. Olgæ* with great hesitation, suspecting it to be a luxuriant state of that plant.

Descr. A slender, glabrous, green undershrub, two to three feet high, with several erect terete stems from a woody rootstock. *Leaves* two to four inches long, opposite, broadly oblong or ovate-oblong, petioled, pinnatisect; segments sessile, falcately linear-oblong or lanceolate, acuminate, quite entire or sparingly sharply serrate, chiefly towards the tip. *Flowers* in terminal panicles; peduncles an inch long, erect, opposite or subopposite, bracteate at the base; lower bracts foliaceous, upper linear. *Calyx* one quarter of an inch long, campanulate, with five small triangular teeth. *Corolla* pale pink; tube one and a half inches long, decurved, shortly cylindrical at the base, then gradually dilated to the nearly flat circular limb, which is one and a quarter inches in diameter, obscurely two-lipped, with six subequal orbicular lobes. *Stamens* inserted at the base of the dilated part of the corolla-tube; anthers divaricate, ciliate. *Fruit* not seen.—*J. D. H.*

Fig. 1, Calyx; 2, base of corolla cut open and stamens; 3, anther; 4, ovary; 5, stigma:—*all enlarged.*

1

2

W. Hood del. et lith. N. Fitch lith

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Tab. 6594.

CLEMATIS coccinea.

Native of Texas.

Nat. Ord. Ranunculaceæ.—Tribe Clematideæ.

Genus Clematis, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 3.)

Clematis *coccinea*; glaberrima, caule gracillimo scandente ramoso, foliis tenuiter coriaceis gracile petiolatis 3–5-foliolatis, foliolis gracillime petiolulatis lateralibus late ovatis ovato-cordatisve obtusis apiculatis convexis subtus glaucis integerrimis reticulatim venosis, terminali majore et latiore integro v. 3-lobo, floribus solitariis longissime pedunculatis coccineis, perianthio ovoideo, sepalis glaberrimis marginibus sericeo-tomentosis crasse coriaceis ovato-lanceolatis erectis apicibus acutis recurvis, acheniis villosis, caudis elongatis plumosis persistentibus.

C. coccinea, *Engelm. in Gray Plant. Wright.* part ii. p. 7.

C. Pitcheri, *Carrière in Rev. Hortic.* 1878, p. 10; *non Torr. et Gr.*

C. Viorna *var.* coccinea, *A. Gray, l. c.*

Putting aside the large-flowered Japanese species of *Clematis*, as *C. florida*, *C. azurea*, &c., this is decidedly the most attractive of all that have lately been introduced into Europe, and, in point of brilliant colour, it is quite unique in the genus. It was first considered by Professor Asa Gray as a variety of *C. Viorna*, an opinion which he has since abandoned, as will be seen by the appended key to the species of North American *Clematis* of this section with which he has favoured me, and which settles once for all that long-confused synonymy, to which I drew attention under Plate 6574.

C. coccinea is a native of Texas, and was received in 1880 at the Royal Gardens from the rich gardens of Max Leichtlin at Baden, and flowered in a cool conservatory in June of the present year. It, however, appears to be perfectly hardy, and a plant of it has been placed against a S.E. wall, where it has, up to this time, grown freely.—*J. D. H.*

Fig. 1, Stamens; 2, ovary :—*both enlarged.*

December 1st, 1881.

Review of the North American climbing species of Clematis, *with compound leaves and thick or thickish erect sepals.*

A. Sepals of the ovoid or somewhat conical and comparatively closed flower very thick, softly leathery, glabrous or almost so (not canescent) except the inflexed margins, their tips not dilated nor conspicuously thin-margined; styles wholly persistent in fruit and plumose throughout.

1. C. VIORNA, *L.*, of the Atlantic States east of the Mississippi; figured only by Dillenius and in Jacquin, Eclogia, tab. 32, by the former under the good character "*flore violaceo clauso.*" The colour is usually of a dull reddish purple.

2. C. COCCINEA, *Engelm. in Gray, Pl. Wright.* vol. ii. p. 7, where I called it *C. Viorna*, var. *coccinea*. Carrière, in Rev. Hort. 1878, p. 10, has described and figured it under the quite erroneous name of *C. Pitcheri*, and it may have other names in cultivation. It is a native of Texas, and is known from *C. Viorna* by its scarlet-red flowers, glaucous foliage, and simpler as well as rounder and more reticulated leaflets.

B. Sepals less thick, pointed and nearly marginless, externally canescent; styles wholly persistent and very plumose to the tip.

3. C. RETICULATA, *Walt.* Native of the Southern Atlantic States east of the Mississippi. The Texan specimens referred to it do not belong to this species, which is well marked by the above characters, and by the excessive and prominent reticulation of the firm coriaceous leaves. The *C. reticulata* figured in Watson, Dendr. Brit., as Lindley has stated, appears to be *C. Viticella*. Perhaps it is that hybrid between *C. Viticella* and *C. integrifolia* which is known in the gardens under the name of *C. Hendersonii*. *C. orata*, Pursh., of which the original specimens in Herb. Oxon. have leaves almost as reticulated as this when old, appears to be *C. ochroleuca*, Ait.

C. Sepals moderately thick and more expanding; styles (in flower and fruit) either naked or silky-pubescent,

not plumose.—Here are two species, apparently only two, but both polymorphous, not nearly related to each other.

4. C. PITCHERI, *Torr. and Gray, Fl. N. Am.* Ranges from the Mississippi River near St. Louis to Texas and Northern Mexico. The general character of the flowers and the conspicuous reticulation of the leaflets (especially in age and in exposed situations, when they become thin-coriaceous) have caused certain forms of this species to be confounded with *C. reticulata*, as in Pl. Wright. ii. p. 7. But its characters are quite distinct. The calyx is more similar, but greener and less canescent. As to the carpels there are two forms, and transitions between them: one (*leiostylis*) with the filiform styles completely glabrous from the first; in the other (*lasiostylis*) they are appressed-silky or villous, either only below or for their whole length. It is this latter form which has been mistaken for *C. reticulata*, yet it is also the one (from Arkansas) upon which *C. Pitcheri* was founded. Perhaps *C. Bigelovii*, Torr. and Gray in Pacif. R. R. Exped. iv. 61, is the same; but there is no specimen at Kew. In Mexico it passes into *C. filifera*, Benth. Pl. Hartw. p. 285, which has also both glabrous and pilose styles.

5. C. CRISPA, *L.*, founded wholly upon the "*Clematis flore crispo*" of Dillenius—the figure and description of which is unmistakable—inhabits the low country from North Carolina, and perhaps Virginia, to Eastern Texas. Well marked by its membranous foliage with lax venation, and by the conspicuous dilated and undulate margins to the upper and spreading part (commonly half) of the sepals when fully expanded. Styles always pubescent, sometimes as hairy as is represented in Gray, Gen. Ill. tab. 2, never plumose. Here belong the figures in Bot. Mag. tab. 1892, and Bot. Reg. xxxii. tab. 60; *C. cordata*, Bot. Mag. tab. 1816; *C. cylindrica*, Bot. Mag. tab. 1160; also *C. Viorna* of Andr. Bot. Rep. tab. 71. But the *C. crispa* of De Candolle is the S. European *C. campaniflora*, *C. parviflora*, D.C. &c. The division and form of the leaflets is excessively variable; moreover the species begins to blossom when low, erect, and quite herbaceous.

Var. *Walteri* (the *C. Walteri*, Pursh., *C. cylindrica*, var. *Walteri*, Torr. and Gray, &c.) is a very narrow-leaved form of this sort, and doubtless includes even the *C. linearilota*, D.C., figured by Delessert from a dried specimen with flower unnaturally outspread.—*A. Gray, Herbarium, Kew, October 25th*, 1881.

A.B. del. J.N. Fitch Lith

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Tab. 6595.

SALVIA columbariæ.

Native of California.

Nat. Ord. Labiatæ.—Tribe Monardeæ.

Genus Salvia, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 1194.)

Salvia (Echinosphace) *columbariæ;* annua, pubescens v. tomentella, caule simplici erecto v. basi ramoso, foliis paucis radicalibus petiolatis oblongis pinnatifido-lobatis v. 1–2-pinnatifidis, caulinis paucis sessilibus lobatis, lobis rugosis obtusis, verticillastris 1–2 purpurascentibus involucrato-bracteatis densifloris, involucri foliolis late ovatis v. rotundatis brevibus rigidis spinescentibus recurvis integerrimis, bracteis consimilibus membranaceis, floribus parvis, calycis oblongi hispidi tubo intus nudo, labio superiore 2-fido segmentis subulatis, inferiore multo breviore dentibus 2 recurvis spinescentibus, corolla azurea tubo calyce incluso, labio superiore emarginato v. 2-fido, inferiore 3-lobo lobis lateralibus brevibus latis, intermedio obcordato profunde 2-fido, filamentis gracilibus.
S. columbariæ, *Benth. Lab. Gen. et Sp.* p. 302, *et in DC. Prodr.* vol. xii. p. 349; *S. Wats. Bot. of California,* p. 599.

A very common Californian annual, remarkable, like so many of the annuals of that country, for the bright colour of its flowers, or rather of its whole inflorescence, which is quite amethystine. It has a wide range in America, west of the Rocky Mountains, abounding throughout California, and extending eastwards to Nevada and southwards to Arizona. It is the "Chia" of the Aborigines, whose favourite drink was an infusion of the small seed-like fruits in water, to which they impart a mucilage.

S. columbariæ belongs to a very small section of the genus, which contains only one other species, and that also a Californian one, *S. carduacea*, Hook., figured at Plate 4874 of this work, a noble plant introduced by Lobb in 1855 (see Mr. Isaac Anderson Henry's note to tab. 4884), with fringed corolla-lobes, and a ring of hairs within the throat. *S. columbariæ* itself was introduced by Mr. Thompson of Ipswich in 1869; though stated to be a perennial in De Candolle's Prodromus, it is decidedly an

annual. The plant here figured flowered in the Herbaceous ground of the Royal Gardens in June of the present year. Its specific name was given from the similarity in habit and aspect to the common sheep's-bit scabious (*Scabiosa columbaria*).

Descr. A rather slender annual, a span to two feet high, puberulous or softly pubescent all over. *Stem* four-angled, simple or divided at the very base, or once trichotomously above. *Leaves* few, radical long-petioled, oblong, lobulate, pinnatifid or bipinnatifid, the divisions obtuse, ultimate short, rounded, surface wrinkled, nerves strong beneath; cauline leaves at the base of the branches small, sessile, simply pinnatifid. *Whorls* of flowers solitary or two at the end of the stem and branches, one to one and a half inches in diameter, dense, hard, many-flowered, outer or involucral *bracts* many, imbricate, a third to half an inch long, rigid, broadly ovate, narrowed into stiff recurved spinous points, red-purple; inner erect and spinescent; inner bracts similar, but more membranous. *Flowers* not exserted beyond the bracts. *Calyx* oblong-cylindric, hispid, strongly ribbed, two-lipped one-third of the way down; upper lip slightly arched, ending in two awl-shaped teeth, lower lip not half as long, recurved also with two awl-shaped teeth. *Corolla-tube* not exserted beyond the calyx; limb deep bright blue, one-third of an inch across the lips; upper lip two-fid, short, reflexed, lower much larger, three-lobed, lateral lobes broad short rounded, terminal broadly obcordate deeply bifid, the divisions spreading and rounded. *Anthers* not contiguous, connective divisions filiform, the upper protruded with a slender anther-cell; lower half as long with a thickened tip. *Stigmatic-arms* long, slender.—*J. D. H.*

Fig. 1, Flower; 2, the same cut open longitudinally; 3, anther; 4, stigma; 5, millets:—*all enlarged.*

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Tab. 6596.

ALOE Perryi.

Native of the Island of Socotra.

Nat. Ord. Liliaceæ.—Tribe Aloineæ.

Genus Aloe, *Linn.*; (*Baker in Journ. Linn. Soc.* vol. xviii. p. 152,)

Aloe *Perryi;* caule brevi simplici, foliis 12–20 dense rosulatis lanceolatis acuminatis subpedalibus e basi ad apicem sensim angustatis glauco-viridibus rubro-tinctis facie canaliculatis dentibus marginalibus deltoideo-cuspidatis parvis pallide brunneis, pedunculo deorsum applanato, racemis 1–3 oblongo-cylindricis, pedicellis flore 3–4-plo brevioribus, bracteis minutis lanceolato-deltoideis, perianthii rubro-lutei pollicaris segmentis oblongis tubo cylindrico triplo brevioribus, genitalibus demum breviter exsertis.

A. Perryi, *Baker in Journ. Linn. Soc.* vol. xviii. p. 161.

The subject of the present plate is a plant of unusual interest. It is said that Aloes was known to the Greeks as a product of the island of Socotra as early as the fourth century before the Christian era; and yet till very recently no material has been obtained from which the botanical characters of the plant which yields the drug could be settled. In the absence of any precise information on the subject, botanists and pharmacists have supposed that the plant that furnished it was an Aloe which was figured in 1697 by Commelinus from the Medical Garden at Amsterdam under the name of "*Aloe Succotrina Angustifolia Spinosa flore purpureo*," a species which was called *Aloe vera* by Philip Miller, and has been characterized by Lamarck and several later authors under the name of *Aloe Succotrina*. By the researches of Mr. Bolus this plant has now been ascertained to be really a native of the Cape of Good Hope, and the Socotra Aloe proves to be a species confined to that island, closely allied in general habit to the well-known Barbadoes Aloe (*Aloe vera*, Linn. = *A. barbadensis*, Miller = *A. vulgaris*, Lam.), but differing in its shorter leaves, and especially in its flowers, which have a tube much longer than the segments, and are arranged in looser racemes, on

longer pedicels. Our first specimens of the Socotra plant were brought to Kew in 1878 by Mr. Wykeham Perry, but these were without flower. A year later we had similar examples brought by Mr. Jas. Collins; but for a full knowledge of the plant and of its best differential characters we are indebted to Professor Bayley Balfour of Glasgow, who made a thorough exploration of the island last year under the auspices of the British Association for the Advancement of Science, and brought home a collection of plants, which includes a large number of new genera and species. Our drawing is made from living plants presented by Dr. Balfour to Kew, two of which flowered in the Succulent-house in the summer of the present year. He found it spread widely through the island, especially in the limestone tracts, ranging from sea-level to an altitude of 3000 feet; and he has also found in small quantity what appears to be a second endemic Socotran species with dwarfer habit and spotted leaves.

Descr. *Trunk* in the cultivated examples simple, about a foot in length, one and a half or two inches in diameter. *Leaves* twelve to twenty in a dense rosette, lanceolate, a foot long, three inches broad at the base, tapering gradually to an acuminate point, a dead rather glaucous green with a reddish tinge towards the edge, channelled all the way down the face, one-sixth of an inch thick in the centre, the small deltoid-cuspidate pale-brown marginal prickles about a quarter of an inch apart. *Inflorescence* one and a half or two feet long, generally with two or three forks, rarely simple; peduncle purple-tinted, flattened towards the base; racemes oblong-cylindrical, three to six inches long, two inches in diameter; pedicels red, a quarter or a third of an inch long, the lower ones cernuous; bracts lanceolate-deltoid, shorter than the pedicels. *Perianth* cylindrical, an inch long, bright red, with a green tip in an early stage, turning yellow as it matures; tube cylindrical, rather constricted at the middle; segments oblong, a third as long as the tube. *Stamens* and *style* finally slightly exserted.—*J. G. Baker.*

Fig. 1, A flower complete; 2, back and front view of anthers; 3, pistil; 4, horizontal section of ovary:—*all more or less enlarged.*

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Tab. 6597.

CALCEOLARIA Sinclairii.

Native of New Zealand.

Nat. Ord. Scrophularineæ.—Tribe Calceolarieæ.

Genus Calceolaria, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. ii. p. 929.)

Calceolaria (Jovellana) *Sinclairii*; pubescens, caule gracili, foliis longe petiolatis ovatis oblongisve subacutis v. obtusis membranaceis grosse crenato-serratis v. marginibus lobulatis lobulis dentatis basi rotundatis v. subcordatis, cymis longe pedunculatis laxifloris, floribus subcorymbosis longe pedicellatis, calycis parvi lobis ovatis obtusis recurvis, corolla pallida intus rubro-punctata late rotundato-campanulata, labio superiore brevi emarginato, inferiore paullo longiore rotundato concavo obscure 3-lobo, tubo basi intus villoso, antheris didymis, filamentis brevibus ima basi tubi insertis, ovario conico.

C. Sinclairii, *Hook. Ic. Plant.* t. 561; *Hook. f. Flora of New Zealand*, vol. i. p. 187; *Handbook of New Zealand Flora*, p. 201; *Benth. in DC. Prodr.* vol. x. p. 206.

The existence in New Zealand of two species of the otherwise peculiarly South American genus *Calceolaria*, is one of the many singular botanical features of the former country; nor is it the only instance of a strong affinity between these distant countries which is not shared by the Australian continent or its islands; for it is repeated by the genera *Fuchsia*, *Coriaria*.

Both the New Zealand Calceolarias belong to a very small American section of the genus which has the lips of the corolla bell-shaped and nearly equal, and of which species only four others are known, of which two have been figured in this work, *C. violacea* (Tab. 4929) and *C. punctata* (Tab. 5392). Of these the former is very closely allied to the New Zealand plant, having the same spotted flowers, only rather larger, with a larger calyx and more depressed ovary, but it has very different leaves.

C. Sinclairii was discovered at East Cape in the Northern Island of New Zealand by the late Dr. Sinclair, R.N., whilst Colonial Secretary, an ardent botanist, who fell a

sacrifice to his zeal, being drowned in crossing a swollen river in the province of Canterbury, when on a botanizing expedition with Dr. Von Haast. It has also been found at Hawke's Bay by Mr. Colenso.

I am indebted to Mr. Isaac Anderson Henry for this very interesting plant; he raised it from seed, which flowered in June of the present year at Hay Lodge, near Edinburgh; and who has, since this plate was engraved, sent a specimen with twice as many flowers on the truss. The other New Zealand species, *C. repens*, Hook. f., is also a native of the Northern Island (forests of the Ruahine range); it is a small creeping very delicate and small-flowered plant.

Descr. A tall very slender straggling herb, one to two feet high, pubescent all over. *Stem* rounded, weak, ascending, sparingly branched from the base. *Leaves* very membranous, long-petioled, two to four inches long, oblong or ovate-oblong, obtuse, crenate-toothed or lobulate on the margin, the teeth or lobules denticulate, base rounded or slightly cordate often oblique, dull green, under surface paler; petiole one to three inches long. *Peduncles* very long and slender, bearing loose subcorymbose heads of long pedicelled flowers. *Calyx* very small, about one-fourth of an inch in diameter; lobes four, broadly ovate, subacute, spreading and reflexed. *Corolla* puberulous, one-third to one-half of an inch in diameter, between hemispherical and campanulate, shortly two-lipped, very pale lilac or flesh-coloured externally, within spotted with red-purple; upper lip emarginate, lower rather longer, concave, very obscurely three-lobed, tube villous at the base within. *Stamens* inserted at the very base of the tube, filaments very short; anthers didymous. *Ovary* shortly conical, acute, pubescent. *Capsule* conical, membranous.—*J. D. H.*

Fig. 1, Base of corolla and stamens; 2, calyx and ovary; 3, transverse section of ovary:—*all enlarged.*

M. Jones del. et lith.

Vincent Brooks Day & Son imp.

L. Reeve & Co. London

Tab. 6598.

PIPTOSPATHA INSIGNIS.

Native of Borneo.

Nat. Ord. Aroideæ.—Tribe Philodendreæ.

Genus Piptospatha, *N. E. Brown in Gard. Chron.* 1879, vol. xi. p. 138.)

Piptospatha *insignis;* pumila, acaulis, glaberrima, foliis anguste elliptico-lanceolatis acuminatis in petiolum breviorem erectum angustatis coriaceis, costa valida, nervis paucis, petiolo basi dilatato breviter vaginante, squamis spathaceis membranaceis roseis denum brunneis, scapis robustis petiolis longioribus, spatha primum erecta denum horizontali v. nutante ellipsoidea rostrata, rostro recurvo, clausa crasse coriacea alba roseo-picta, spadice incluso crassiusculo sessili toto florifero, floribus basalibus paucis neutris, terminalibus ♂, intermediis ♀, antheris subsessilibus connectivo crasso ultra loculos laterales oblongos in rostrum crassum producto. ovariis prismaticis 1-locularibus, stigmate sessili, placentis 2–3 parietalibus, ovulis erectis orthotropis, funiculo curvo supra basin affixo.

P. insignis, *N. E. Br. l. c. et Icon.* pp. 138, 139, f. 20.

Mr. N. E. Brown (Assistant in the Herbarium at Kew), who makes a special and very careful study of Aroids, has, I think, rightly referred this curious little plant to a new genus of the small Malayan group of *Philodendreæ*, with the spathes circumsciss above the position of the ovaries, which includes *Schismatoglottis;* though it hardly agrees with Engler's character of a low-branched undershrub, which Engler attributes to the group, "Suffrutices humiles ramosi." The term suffrutex, or undershrub, is obviously here used in a different sense from the generally recognized one, of "woody" plants, for *Schismatoglottis* is clearly a herb, as is *Piptospatha*.

Borneo, the native country of this plant, is eminently rich in Aroids, and their investigation would well reward the labours of a botanist who could devote a year to them in their native forests. *Piptospatha* was discovered by Mr. Burbidge when collecting for Messrs. Veitch in that island, and the plant here figured was presented to the Royal Gardens by the latter firm. It flowered in July.

December 1st, 1881.

Desch. A low stemless green herb, with numerous densely tufted long cylindric roots. *Leaves* all radical, four to five inches long, by three-quarters of an inch broad, petioled, narrowly elliptic-lanceolate with acuminate recurved points, narrowed into the petiole at the base, very coriaceous, smooth, with slightly recurved margins; midrib stout, prominent beneath; nerves three to five pairs, very oblique; colour deep dark-green above, much paler beneath; petiole from one-third to two-thirds as long as the blade, erect, grooved above, green in cultivated specimens (red in Mr. Burbidge's drawing of native ones). *Sheaths* long, membranous, acuminate, brown. *Peduncle* stout, longer than the petioles, erect, red-brown, curved at the top. *Spathe* one to one and a quarter inch long, ellipsoid with an upturned acute beak, white suffused with rose; coriaceous, convolute and closed except a small opening towards the point; after flowering the upper part of the spathe above the position of the female flowers on the spadix separates from the lower by a transverse rupture. *Spadix* wholly included, cylindric, stout, white, rounded at the end, wholly covered with flowers, the projecting tips of the anthers giving the upper part a thickened appearance. *Neuter organs* (imperfect females) forming a few rows at the very base of the spadix, clavate, or rounded at the swollen tip, quite smooth. *Male flowers* without perianth, consisting of crowded stamens occupying the upper two-thirds of the spathe, the uppermost only imperfect; stamens with a very short filament dilating into a broad cellular thick connective, which is produced beyond the anther-cells into a conical beak; cells ellipsoid, parallel, separated by the connective, discharging the pollen from the top of a vertical slit. *Female flowers* of crowded ovaries below the males, without perianth or staminodes; ovary obpyramidal, obtusely five-angled; stigma sessile occupying the whole broad top of the ovary; cavity large; *Ovules* irregularly placed on several parietal placentas, long, erect, nearly orthotropous, the funicle being attached above the rounded base. *Fruit* not seen.—*J. D. H.*

Fig. 1, Spadix; 2, longitudinal section of ditto; 3, imperfect ovaries; 4, perfect ovaries; 5, stamen; 6, longitudinal, and 7, transverse section of ovary; 8, ovule:—*all enlarged.*

A.B. del J.N. Fitch Lith

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TAB. 6599.

ESCALLONIA RUBRA *var.* punctata.

Native of Chili.

Nat. Ord. SAXIFRAGEÆ.—Tribe ESCALLONIEÆ.

Genus ESCALLONIA, *Linn.*; (*Benth. et Hook. f. Gen. Pl.* vol. i. p. 644.)

ESCALLONIA *rubra;* glanduloso-pubescens v. hirtella, fruticosa, ramis erectis virgatis, foliis sessilibus in petiolum brevem angustatis ovatis v. obovatis acutis v. obtusis serrulatis læte viridibus nitidis subtus hirtis v. glanduloso-punctatis v. glabris, floribus paucis subcorymbosis suberectis, calycis tubo turbinato, limbi lobis ovatis acuminatis v. triangulari-subulatis, corolla intense rubra, petalis in tubum pentagonum 5-costatum subcohærentibus limbo parvo revoluto.

E. rubra, *Persoon Encheirid.* vol. ii. p. 235; *De Candolle Prodr.* vol. iv. p. 3; *Hook. in Bot. Mag.* t. 2890.

STEREOXYLON rubrum, *Ruiz et Pav. Fl. Peruv.* vol. iii. t. 236, f. 6.

Var. punctata, foliis ellipticis acutis; E. punctata, *DC. Prodr,* vol. iv. p. 3.

Though very dissimilar in foliage and colour of the flower from the form of *E. rubra* figured at Tab. 2890 of this work, an examination of a large series of dried specimens proves that both are but varieties of one common and widely-diffused Chilian species, to which may probably be referred several others, now described as different. It is a native of rocky ravines of the Andes called Quebradas, from Valdivia northwards, and the narrow-leaved form of it was introduced in 1828 into the Botanic Garden of Liverpool, from whence it was distributed over Great Britain and the Continent. In its native country the whole plant is covered more or less densely with resin-secreting hairs which are reduced to glandular dots on the under surface of the leaves, and the whole shrub emits a powerful odour, but in our Gardens, probably owing to a less powerful sun, there is little of this secretion.

The plant here figured entirely accords with native specimens collected at Valdivia by Lechler, and named *E.*

punctata by Miquel; it differs slightly from De Candolle's description, in the flowers being often in twos and threes. Engler, in his Monograph of Escallonia, &c., in the Linnæa (vol. xxxvi. p. 544), refers Lechler's specimens to *E. macrantha*, Hook. and Arn. (Tab. 4473 of this work), which is a very much larger plant, with numerous and much larger flowers.

E. rubra var. *punctata* flowers freely in the open air against a south wall, in the month of July, in the Royal Gardens, and though not so handsome as *E. macrantha*, is a very attractive plant.

Descr. A shrub, three to six feet high, much branched, evergreen, more or less clothed with resinous pubescence glands; branches slender, twiggy, with rich brown bark. *Leaves* one to one and a half inch long, deep bright green, sessile or narrowed into a very short petiole, elliptic-ovate acute, finely serrated, the serration often irregular; upper surface glossy with deeply impressed veins; under paler, smooth, glabrous or glandular-pubescent, or gland-dotted. *Flowers* one to four, rarely more, in terminal corymbs, suberect, pedicels a quarter to half an inch long, pubescent. *Calyx-tube* turbinate, limb of five spreading entire or serrate triangular-ovate acuminate lobes, rather longer than the tube. *Corolla* deep dark red; petals one-third to half an inch long, cohering in an obtusely five-angled tube, with thickened angles (the overlapping margins), tips of the petals about twice as broad as the claws, rounded, revolute. *Stamens* equalling the tube in length, anther-tips exserted. *Stigma* very shortly exserted.—*J. D. H.*

Fig. 1, Flower cut open longitudinally; 2, stamen; 3, top of style and stigma; 4, disk surmounting the ovary and base of style:—*all enlarged.*

INDEX

To Vol. XXXVII. of the THIRD SERIES, or Vol. CVII. of the whole Work.

6546 Abronia latifolia.
6565 Æchmea Lindeni.
6589 Agave Hookeri.
6580 Aloe macracantha.
6596 Aloe Perryi.
6552 Aquilegia formosa.
6586 Aristolochia altissima.
6549 Aster gymnocephalus.
6585 Babiana socotrana.
6555 Begonia socotrana.
6573 Berberis sinensis.
6567 Bolbophyllum Beccarii.
6597 Calceolaria Sinclairii.
6588 Campanula Allionii.
6590 Campanula Tommasiniana.
6551 Cladrastis amurensis.
6542 Clematis æthusæfolia, *var.* latisecta.
6574 Clematis reticulata.
6594 Clematis coccinea.
6561 Clerodendron trichotomum.
6539 Crawfurdia luteo-viridis.
6570 Crinum Balfourii.
6545 Crinum Forbesianum.
6566 Cuscuta reflexa.
6591 Dendrobium Treacherianum.
6583 Drosera capensis.
6577 Engelmannia pinnatifida.
6599 Escallonia rubra, *var.* punctata.
6578 Euadenia eminens.
6543 Fourcroya cubensis, *var.* inermis.
6568 Geum elatum.
6554 Hechtia cordylinoides.
6571 Homalonema Wallisii.
6562 Hymenocallis Harrisiana.
6563 Hypericum Coris.
6550 Impatiens amphorata.
6593 Incarvillea Koopmannii.
6579 Iris missouriensis.
6559 Jasminum gracillimum.
6569 Kniphofia comosa.
6553 Kniphofia Uvaria, *var.* maxima.
6538 Lysionotus serrata.
6557 Melianthus Trimenianus.
6541 Millettia megasperma.
6556 Musschia aurea.
6564 Nardostachys Jatamansi.
6547 Nerine filifolia.
6584 Nunnezharia tenella.
6536 Nymphæa tuberosa.
6592 Olearia Haastii.
6575 Osbeckia rostrata.
6581 Pinanga patula.
6598 Piptospatha insignis.
6535 Pitcairnia zeifolia.
6540 Polygonum sachalinense.
6560 Potentilla (Ivesia) unguiculata.
6582 Primula poculiformis.
6558 Protea penicillata.
6548 Rosa microphylla.
6595 Salvia columbariæ.
6576 Schismatoglottis crispata.
6534 Silphium laciniatum.
6537 Statice tatarica.
6572 Synechanthus fibrosus.
6544 Tricyrtis macropoda.
6587 Veronica carnosula.